DOCUMENT RESUME

ED 111 425 52 IR 002 52[illegible]

AUTHOR	Borko, Harold
TITLE	A Study of the Needs for Research in Library and Information Science Education. Final Report.
INSTITUTION	California Univ., Los Angeles. Inst. of Library Research.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Bureau of Research.
BUREAU NO	BR-9-0256
PUB DATE	31 Oct 70
NOTE	334p.
EDRS PRICE	MF-$0.76 HC-$17.13 Plus Postage
DESCRIPTORS	Curriculum; Educational Planning; Higher Education; *Information Science; Library Associations; *Library Education; Library Role; Library Schools; Library Surveys; Objectives; Personnel Needs; Professional Continuing Education; *Research Needs; State of the Art Reviews; Tables (Data)
IDENTIFIERS	Delphi Technique

ABSTRACT

A study of library and information science education research needs begins with a collection of readings which provide information on current research, along with needs in the areas of goals and curricula; library school administration, faculty, and students; the relationship among professional associations, library schools, and libraries; the library school and library staffing requirements; continuing education; the role of the library community; and the use of the Delphi technique in determining research priorities. Results of a survey (using the Delphi technique) to forecast research needs in library and information education, and to establish priorities, are tabulated. A list of major research needs includes the improvement and updating of the skills of professional librarians, and improvements in library school planning. Other needs are listed in decreasing order of importance. (LS)

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ED111425

THE FINAL REPORT

O.E. Bureau of Research No. BR-ITD-L&IS
Contract No. Br-#9-0256

A Study of the Needs for Research in Library and Information Science Education

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IR 002 521

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Office of Education
Bureau of Research

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PREFACE AND POSTSCRIPT

PREAMBLE

Library and information science education is striving to meet the expanding needs for qualified and capable individuals in what has been called "the information industry". In the process of expanding, the library schools are looking inward as they seek to improve their own administrative procedures, to revise and and upgrade their curricula, and to modernize their teaching methods. They wish to change and improve, but what needs to be changed and in what direction? Efforts to create improvements are being hampered by the lack of a comprehensive and integrated body of knowledge that would identify current educational needs and the most effective methods for their achievement. In essence, the research to support innovative educational decision-making is lacking. At the same time that the library schools are expanding and searching for a more effective teaching program, the U. S. Office of Education, the Council on Library Resources, and other government and private agencies are receiving requests to support projects in the areas of library and information science. These organizations recognize the need for research and development and are anxious to support appropriate efforts. However, they too are hampered by the lack of a comprehensive plan that would identify the needs and priorities for educational research. Without such a plan, the results obtained from the expenditure of critical intellectual and financial resources would lack direction and the impact of the studies would be reduced.

THE VILLA CORTONA CONFERENCE, NOVEMBER 10-11, 1968

The need to improve and enhance the relevance of library and information science education was recognized almost simultaneously by a number of key individuals and organizations. In November 1968, a conference was called to discuss constructive action that should be taken toward solution of the problem. The conveners of this conference were the Reverend James J. Kortendick, the President Elect of the Association of American Library Schools; Kurt Cylke, the acting Chief of the Library and Information Sciences

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Research Branch of U.S.O.E.; and Foster Mohrhardt of the Council of Library Resources. The conference was held on November 10-11, 1968, at the Villa Cortona in Bethesda, Maryland under the Chairmanship of Father Kortendick, and it was attended by a dozen individuals representing organizations interested and involved in library and information science education.

The discussions that took place at this meeting have been recorded, transcribed, and are a matter of record. A number of important decisions were made, among them being that:

(1) The AALS should sponsor and submit a proposal to the Library and Information Sciences Research Branch, U. S. Office of Education, requesting support for a study which would identify needed research in library and information science education;

(2) The broad objectives of the study were stated, discussed and approved;

(3) A principal investigator, Harold Borko, was selected and given the responsibility for the detailed planning and implementation of the study;

(4) An advisory committee and a consultant group were to be appointed to guide and participate in the study.

PROJECT OBJECTIVES: A STUDY OF NEEDED RESEARCH

In this study of the needs for research in library and information science education, three major objectives were defined:

(1) To describe and summarize the content of existing programs being offered in librarianship and information science.

It was anticipated that the data gathered during this phase of the study would provide some insights into current educational practices and help identify differences and innovative ideas among the different library schools. This descriptive study was to provide accurate information about the present status of library education and to provide a basis for discussing proposed changes. The findings are reported in Part I of this volume.

(2) To identify problems and needs in library and information science education, and to indicate the data and the research that would be required to resolve these problems.

This second objective is really the heart of the study. Educational Administrators are aware that they must plan and modify their existing curricula in order to provide relevant education to meet future needs. The problems they face are how to determine future requirements; how to identify the areas in which change is needed; how to gather the information on which to base their decisions, and how to implement the desired improvements. In essence, the task was to identify the kinds of research that needs to be done in order to provide information on which to base an innovative educational program. To accomplish this objective, ten recognized leaders in library and information science education were asked to serve as consultants to the project and to discuss research needs in specified areas. The results of their efforts are reported in Part II of this volume.

(3) To coordinate the various research suggestions and to list them in an order of priority.

The various research suggestions made by the experts were coordinated and compared so that duplicate proposals could be eliminated, others combined, etc. The research proposals could then be evaluated for their importance and priorities established. In this third phase of the study, the Delphi technique was used in order to improve the accuracy of the predictions and of the ratings. The methods employed, and the results obtained, are described in Part III.

THE EDUCATIONAL VALUE OF THE WORK

The study has been completed, and the results, a list of projects and priorities, have been submitted to the sponsoring agency. Normally, the principal investigator would then write finis and turn to other work. However, the "other work" of the principal investigator is teaching, including the teaching of research techniques to candidates for the Master's Degree in Information Science. He has found, in the writing of the Master's Thesis, that the perennial problems are how to choose a research topic and how to execute the study. The research just completed provides an ideal source of ideas and topics for research that have been suggested by eminent library school educators. In addition, some of the techniques employed have been adopted from other disciplines. These, although neither ideal nor exemplary, may influence and stimulate the student to explore the possibility of using less common statistical and survey techniques in carrying out his own research projects. With this application in mind, the project report has been written to stress methodology as well as results. It is hoped that other instructors will find the discussions and examples useful in the teaching of research in the library school.

ACKNOWLEDGEMENTS

More than most, this study owes whatever virtues it has to a group of devoted individuals who constituted an Advisory Committee. They are:

Rev. James J. Kortendick, Chairman
Catholic University of America

Jack Dalton
Columbia University

Guy Garrison
Drexel Institute of Technology

Irving Klempner
State University of New York at Albany

Patricia Knapp
Wayne State University

Alan M. Rees
Case Western Reserve University

Vladimir Slamecka
Georgia Institute of Technology

It is with a great deal of gratitude and thanks that I acknowledge this debt. However, the advisors are not to be held accountable for any inaccuracies in the report, for the execution of the study was the responsibility of the investigator and his staff.

In addition to the Advisory Committee, the people who really did the major task of identifying needs in library and information science education are the ten consultants who wrote the chapters in Part II. Without them, there would have been no study. Their work speaks for itself, and I can only add a personal thanks for their efforts and cooperation.

A third group of contributors to the success of the study were the many colleagues who responded to not one but two questionnaires. An 80% return was achieved--an almost phenomenal rate and a clear indication of the interest that our profession has in improving educational practices. To these colleagues, I again say thanks and hope that their efforts bear fruit.

The study was administered through the UCLA Institute of Library Research, and the project received strong support from Andrew H. Horn, Dean of the School of Library Service; Robert M. Hayes, Director of the Institute of Library Research, Kevin D. Reilly, who served as Associate Project Head; Nancy Brault, Librarian and research assistant, and the secretaries, Patricia Honley, Mary King, and Joyce Graves.

Perhaps my most important debt is owed to the U. S. Office of Education, particularly to Kurt Cylke and his successor, Lawrence Papier, at the Library and Information Sciences Research Branch, for their financial support and sponsorship.

The task of carrying out the research has been a very stimulating one, but the real value of the study will be seen in the new research that this project suggests and in the application of the results to improve the relevance of library and information science education.

Harold Borko
Principal Investigator

PART I

THE CURRENT SCENE

Logic demands that we begin our study of library and information science education by examining present practices, for it is only by understanding the current scene that we can project and plan the research needed to bring about improvements.

The report that follows in Part I is a descriptive study of library school curricula in North America. It utilizes, as input data, the courses offered by 75 accredited and non-accredited library schools. For comparative purposes, the curricula material is organized and arranged by courses and by schools. Then, in an attempt to identify patterns and similarity groupings, the school-by-course matrix is factor analyzed. Three meaningful factors are derived; one, a general factor, reflects a "core curriculum"; a second factor emphasizes "information science": and the third factor has to do with "school librarianship" However, there is considerable overlap among the patterns, and they are not clearly differentiated one from the other. Indeed, perhaps the most important conclusions of this study are that, on the basis of the course descriptions in the catalog, there are no discernible systematic differences between accredited and non-accredited schools, or between public and privately supported institutions, or between geographic regions. This is not to say that there are no differences between library schools, for clearly there are; but that what is less clear is whether these differences can be identified from the catalog descriptions of the courses offered or by means of a factor analysis.

This study helps identify the curriculum structure of the different schools and also contributes to our understanding of the strengths and weaknesses of the methodology used in the analysis.

CHAPTER I

RESEARCH NEEDS IN LIBRARY AND INFORMATION SCIENCE EDUCATION

This study was performed under the supervision of Dr. Carlos Cuadra and the Library and Documentation staff at the System Development Corporation in Santa Monica, California.

AN ANALYSIS OF LIBRARY SCHOOL CURRICULA

Introduction

Library schools throughout North America are examining their methods of operation and the relevancy of their course offerings as they prepare to meet the challenges created by the availability of new procedures and technologies. But before one can intelligently propose improvements, one must know the current state of affairs both in individual schools and throughout the continent. One needs to establish a base line of authoritative data from which one can measure the degree and the direction of the desired changes.

This study of library school curricula is designed to establish such a base line. It is a descriptive study which seeks to collect and analyze a body of data on the courses now being offered in accredited and non-accredited library schools in North America. Five specific tasks have been defined. These are:

(1) to select a sample of accredited and non-accredited library schools for analysis;

(2) to devise a classification system by which to organize and group course descriptions obtained from current library school catalogs;

(3) to arrange the data in the form of a matrix in which the columns are the library schools and the rows are the course offerings listed by classification category;

(4) to factor analyze the matrix and derive the basic factorial grouping;

(5) to interpret the results of the study on current teaching content in library schools and to make recommendations relevant to research needs.

1. Selection of the Schools

Seventy-five library schools were included in this study, the forty-six institutions that had been accredited prior to August 1, 1969, and a comparable sample of twenty-nine non-accredited schools. The selection of the accredited schools offered no problem; however, it was difficult to select comparable non-accredited schools. To be included in the study, the non-accredited library school had to offer a graduate degree or an equivalent program of study in terms of the range and content of courses required for graduation. Schools that specialized in the preparation of school librarians were considered acceptable, provided that their course coverage was comparable to the requirements of accredited institutions in this area.

A second restriction further limited the number of eligible non-accredited schools. We thought it possible that there might be regional similarities in the curricula of the several schools, e.g., the Northeastern schools might have somewhat different curricula from that of the Southern schools. In order to provide a basis for testing this hypothesis, we selected the sample of non-accredited schools to reflect the geographic dispersion of the accredited sample.

The schools finally selected for inclusion in the study are the forty-six accredited schools and twenty-nine non-accredited institutions listed in Tables I and II. The numerical identification assigned to these schools will be used consistently throughout this report.

2. A Classification Scheme for Library Courses

Use of Course Descriptions

Course descriptions found in library school catalogs were used as the basic data base for the study. It is, of course, well known that catalogs by themselves do not fully represent the content of the courses as they are taught; moreover, course descriptions and titles can be deceptive. Nevertheless, the catalogs are the principal basis on which students select courses and on which counselors provide guidance and they contain the only authorized description for the content of the curricula. While the description may not be an accurate statement of what is actually being taught, it must be considered--at least for the limited purposes of this study--a valid statement of what the school believes should be taught in that course. In spite of its limitations, the use of catalog descriptions of courses seems to provide a logical, inexpensive and reasonably objective way of comparing the curricula of different schools.

Need for Classification

In considering any study of curricula in the library schools of North America, the first question that must be addressed is how the courses might be structured or categorized for comparison and analysis. Scanning a selection of catalogs confirmed our initial impression that the description of course content varies enormously within

TABLE I. ACCREDITED LIBRARY SCHOOLS

NORTHEAST

1. Catholic University
   Washington, D. C.
2. Columbia University
   New York, New York
3. Drexel Institute of Technology
   Philadelphia, Pennsylvania
4. University of Maryland
   College Park, Maryland
5. State University of New York
   Albany, New York
6. State University of New York
   Geneseo, New York
7. University of Pittsburgh
   Pittsburgh, Pennsylvania
8. Pratt Institute
   Brooklyn, New York
9. Rutgers University
   New Brunswick, New Jersey
10. Simmons College
    Boston, Massachusetts
11. Syracuse University
    Syracuse, New York

SOUTHEAST

12. Atlanta University
    Atlanta, Georgia
13. Emory University
    Atlanta, Georgia
14. Florida State University
    Tallahassee, Florida
15. University of Kentucky
    Lexington, Kentucky
16. Louisiana State University
    Baton Rouge, Louisiana
17. University of North Carolina
    Chapel Hill, North Carolina
18. George Peabody College for Teachers
    Nashville, Tennessee

MIDWEST

19. Case Western Reserve University
    Cleveland, Ohio
20. University of Chicago
    Chicago, Illinois
21. University of Illinois
    Urbana, Illinois
22. Indiana University
    Bloomington, Indiana
23. Kansas State Teachers College
    Emporia, Kansas
24. Kent State University
    Kent, Ohio
25. University of Michigan
    Ann Arbor, Michigan
26. University of Minnesota
    Minneapolis, Minnesota
27. Rosary College
    River Forest, Illinois
28. Wayne State University
    Detroit, Michigan
29. Western Michigan University
    Kalamazoo, Michigan
30. University of Wisconsin
    Madison, Wisconsin

SOUTHWEST

31. North Texas State University
    Denton, Texas
32. University of Oklahoma
    Norman, Oklahoma
33. University of Texas
    Austin, Texas
34. Texas Woman's University

TABLE I. (Continued)

WEST

35. University of California
~~Berkeley, California~~
36. University of California
Los Angeles, California
37. University of Denver
Denver, Colorado
38. University of Hawaii
Honolulu, Hawaii
39. University of Oregon
Eugene, Oregon
40. University of Southern California
Los Angeles, California
41. University of Washington
Seattle, Washington

CANADA

42. University of British Columbia
Vancouver 8, B.C.
43. McGill University
Montreal 110, Quebec
44. University of Montreal
Montreal, Quebec
45. University of Toronto
Toronto 5, Ontario
46. University of Western Ontario
London, Ontario

TABLE II. NON-ACCREDITED LIBRARY SCHOOLS

NORTHEAST

1. Clarion State College
   Clarion, Pennsylvania
2. University of Maine
   Orono, Maine
3. State University of New York
   Buffalo, New York
4. University of Rhode Island
   Kingston, Rhode Island
5. St. John's University
   Jamaica, New York
6. Southern Connecticut State College
   New Haven, Connecticut

SOUTHEAST

7. Appalachian State University
   Boone, North Carolina
8. University of Georgia
   Athens, Georgia
9. University of Mississippi
   University, Mississippi
10. University of Puerto Rico
    San Juan, Puerto Rico
11. University of South Florida
    Tampa, Florida
12. University of Southern Mississippi
    Hattiesburg, Mississippi

MIDWEST

13. Central Michigan University
    Mount Pleasant, Michigan
14. Indiana State University
    Terre Haute, Indiana
15. University of Iowa
    Iowa City, Iowa
16. University of North Dakota
    Grand Forks, North Dakota
17. University of Missouri
    Columbia, Missouri
18. Northern Illinois University
    Dekalb, Illinois
19. St. Cloud College
    St. Cloud, Minnesota
20. University of Wisconsin
    Milwaukee, Wisconsin

SOUTHWEST

21. East Texas State University
    Commerce, Texas
22. Our Lady of the Lake College
    San Antonio, Texas

WEST

23. University of Arizona
    Tucson, Arizona
24. Immaculate Heart College
    Los Angeles, California
25. University of Portland
    Portland, Oregon
26. San Jose State College
    San Jose, California
27. Utah State University
    Logan, Utah

CANADA

28. University of Alberta
    Edmonton, Alberta
29. University of Ottawa
    Ottawa, Canada

TABLE III. LIBRARY SCHOOL CURRICULUM CLASSIFICATION

- 1.0 Libraries and Librarianship
  - 1.1 Library Service (the Library in Society)
    - incl. Librarianship, Professionalism, Current Trends
  - 1.2 Communications and Public Relations
  - 1.3 Comparative Librarianship
  - 1.4 History of Libraries
  - 1.5 History of Libraries
  - 1.6 Publishing

- 2.0 Library Education and Research
  - 2.1 Education for Librarianship
  - 2.2 Research, Thesis and Exam Preparation
    - incl. research methods
  - 2.3 Field Study

- 3.0 Organization and Administration of Libraries
  - 3.1 Administration and Management
    - General only - when a specific type library, classify under library type
  - 3.2 Audiovisual Resources and Services
  - 3.3 Photoreproduction Services
  - 3.4 Library Buildings and Equipment
    - use regardless of type of library
  - 3.5 Technical Services
    - incl. acquisition, circulation, preparation of books

- 4.0 Library Literature and Selection (Reading Guidance)
  - 4.1 Selection Procedures--Basic Books
    - reading studies, building library collections
  - 4.2 Adult Literature
  - 4.3 Children's and Young Adult Literature
    - (incl. Story Telling)
  - 4.4 Fiction and Popular Literature
  - 4.5 Foreign Language Literature

- 5.0 Information Science
  - 5.1 Information Science and Library Automation
    - incl. Linguistics
  - 5.2 Computer and Equipment Applications

- 6.0 College Libraries and Librarianship

- 7.0 School Libraries and Librarianship

- 8.0 Public Libraries and Librarianship
  - 8.1 Public Libraries
    - incl. Library in Adult Ed. Library work with children when not 4.3 or 7.0
  - 8.2 Regional Libraries

TABLE III. (Continued)

9.0 Special Libraries and Librarianship
(incl. internship and work study programs in these libraries; incl. the preparation of specialized bibliographies for these libraries)
- 9.1 Special Libraries--General
- 9.2 Information Centers
- 9.3 Industrial and Technical Libraries and Librarianship
- 9.4 Law Libraries and Librarianship
- 9.5 Medical Libraries and Librarianship
- 9.6 Music Libraries and Librarianship
- 9.7 Newspaper Libraries and Librarianship
- 9.8 Theological Libraries and Librarianship

10.0 Special Collections
- 10.1 Archives
- 10.2 Government Publications
  U.S., Foreign or Intl. incl. U.N.
- 10.3 Manuscripts
- 10.4 Maps
- 10.5 Periodicals and Serials
- 10.6 Rare Books

11.0 Reference and Bibliography (Sources and Materials)

- 11.1 Reference Librarianship--General
  incl. advanced courses in general reference
- 11.2 Humanities--Reference Materials
- 11.3 Science and Technology--Reference Materials
- 11.4 Social Sciences--Reference Materials
  incl. business and finance
- 11.5 Fine Arts
- 11.6 Reference and Bibliography--Special
  incl. analytical bibliography
  Use for bibliography course covering more than one subject
  Do Not Use for special bibliography courses that could be filed under Section #9 (Special Libraries) or under the other subdivisions of Section #11

12.0 Classification and Cataloging
incl. organization of materials

13.0 Abstracting and Indexing

14.0 Miscellaneous
- 14.1 Use of the Library
  (For non-library school students)
  incl. courses in library orientation

the same subject area, depending, in part, upon whether the emphasis of the course is on a library function or on a type of library. Even the notion of the existence of a "core curriculum" becomes confused. It may or may not be true that all library schools provide the same basic education in the fundamentals of library history, service, cataloging and reference, but it is hard to prove this by just reading the descriptions of the available courses. Even though the content may be the same, the prose is different.

The purpose of the classification structure was to provide a means for grouping under a single category the different descriptions of the same basic course content. This task is by no means simple, and some of the difficulties encountered in its use are discussed later in this section.

As an aid in structuring the range of courses, it is helpful to consider each title and course description as a "document". A classification scheme is simply a means for organizing these documents. This is a useful analogy, for the course descriptions represent course content in the same way that document abstracts represent the more extended prose of articles and reports, i.e., the subject matter as taught, with varying degrees of reliability and fidelity. The proposed conceptualization does not eliminate the problems involved in classifying courses but it does suggest a workable procedure in which the problems are familiar and the difficulties well understood.

Building The Classification Schedule

The construction of the classification schedule began with the selection of a representative sample of catalogs from the accredited institutions, a study of the range of courses described therein, and identification of the major categories of instruction common to a number of schools. The result of this procedure, the preliminary classification schedule, was checked for completeness against the offerings of several additional institutions not included in the original sample of schools. Particular attention was given to the adequacy of the preliminary schedule in covering the courses of schools offering doctoral programs and innovative areas of instruction.

The selected major categories were then subdivided and elaborated into detailed schedules, and a simple numerical coding or notation scheme was adopted to identify the classes. This preliminary schedule was then tested and revised. As difficulties were encountered or gaps appeared, the classification schedule was modified and again reviewed for logical organization, consistency and completeness. The final product, a Library School Curriculum Classification Schedule (Table III), the result of many iterations, contains fourteen major categories and a total of forty-eight classes.

Assignment of Courses to Class Categories

During the testing phase in the development of the classification schedule, copies were made of a cross-section of school catalogs, and the individual course descriptions were cut and pasted on 4" x 6" cards. As the courses were assigned to a category, the class number was recorded on the card together with any clarifying notes. These cards were then filed in class-number order. This arrangement of courses facilitated checking and schedule modification as well as testing for individual consistency and interpersonal variation in making assignments. Two librarians and one information scientist participated in classifying the course descriptions and in checking and revising each other's assignments.

As the work of class assignment and revision went forward, it gradually became clear that, for many schools, the classification schedule offered rather ambiguous choices. This is not surprising, for the classification schedule itself is a compromise reflecting the diverse constraints that institutions have in formulating their course descriptions, the different orientations that are possible, the emphasis on library function or on library type, etc. However, the purpose of the study was not to provide more accurate course descriptions or better classification categories; the aim was to devise a scheme for comparing the course offerings of different library schools. By grouping courses into categories, we in effect generalized the descriptions obtained from the catalogs, and thus made the comparisons more, rather than less, reliable.

The classification schedule proved to be workable and useful for organizing and comparing the course offerings of the different library schools. It was, however, an initial attempt, and it is far from perfect. Hopefully, the scheme will be found useful and will be applied to other situations beyond the confines of this project.

3. The Data Matrix

Having completed the classification of all the courses into their proper categories, and having done this for all seventy-five schools, it was possible to prepare a data matrix as an aid to analysis. In this matrix (Table IV) the seventy-five library schools in the sample are represented as columns numbered in conformity with the listings in Tables I and II. Thus column 1 represents Catholic University and column 12, Atlanta University, etc. The rows represent the classification categories and the three digit code is the same as the notation on Table III.

Initially, when tallying the courses, we tried to compensate for the difference between semester and quarter course hours. We normalized the apparent variation in credit hours between schools for similarly described courses by the units required for graduation, but the results obtained did not vary appreciably from a straightforward count. We abandoned the effort, since it could have become costly and did not provide any significant improvement. In the procedure we used, we counted each course once for assignment to a class category every time that it could be taken for credit. In most instances, this meant a count of 1 for a given course. However, we gave the seminar courses and thesis preparation a count for each semester or quarter for which unit credits could be given.

The numbers in each of the cells in Table IV are indicative of the number of courses offered by a particular school in a certain category. Thus, the number 1 in cell 1-010 (the first cell in column 1, row 010) means that Catholic University offers one general introductory course in Libraries and Librarianship. Going down the column, it will be seen that Catholic University also offers a course in Library Service (011) and a course in Comparative Librarianship. It offers no courses on the History of Books and Printing (014); however, Columbia University (Column 2) offers three courses in that area.

By selecting a school, and reading down the column, the reader can quickly obtain a summary of all the courses availale at that school. The table also allows the reader to identify those schools that teach certain specialized courses, e.g., in Law Librarianship 094, four courses are taught at the University of Washington (#41); 097 a course in Newspaper Libraries and Librarianship is given as a separate course at only one school, Kent State University.

4. The Factor Analysis

The Correlation Table: School vs School

Using the information contained in Table IV, it was possible to calculate the degree of similarity that exists between different library schools, by computing the coefficient of correlation between each school and all seventy-four others. If two schools offered the same number of courses, and if the courses were classified into precisely the same categories, these two schools would be perfectly correlated, i.e., the correlation coefficient would be equal to 1.00. To the extent that the course

TABLE V. HIGHEST FACTOR LOADINGS

Factor No. 1		Factor No. 2		Factor No. 3		Factor No. 4	
School No.	Factor Score	School No.	Factor Score	School No.	Factor Score	School No.	Factor Score
58	796	7	824	56	775	73	904
71	786	4	802	48	764	54	892
18	768	15	781	10	732	65	652
24	727	19	762	51	711	55	650
9	724	45	755	21	705	57	615
41	724	49	718	44	682	59	606
32	720	42	664	38	674	66	597
16	710	75	659	1	648	28	546
53	683	36	651	27	630		
33	683	6	621	66	585		
31	667	17	600	5	561		
40	667	35	576	25	539		
67	644	20	568	20	527		
60	641	70	550	52	527		
14	638	30	530	68	500		
50	620	22	524				
69	617	3	513				
3	593	63	507				
25	586						
52	585						
22	584						
26	582						
34	580						
28	565						
39	559						
29	558						
51	537						
72	529						
12	526						
23	524						
37	522						
62	521						
74	518						
2	515						
43	515						
70	504						

TABLE IV. DATA MATRIX: SCHOOL VS

Classification Code	School Identification																																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
010	1	0	0	0	0	1	2	1	0	1	1	0	0	1	1	0	0	0	1	1	1	0	2	0	0	0	1	1	0	0	0	1	1	2	2	2	2	0	0	0	0	0
011	1	2	1	1	1	2	2	1	2	1	2	1	1	3	0	1	1	3	[illegible]	1	1	2	2	1	1	0	1	1	3	1	[illegible]	1	1	1	1	2	2	3	2	3	1	3
012	0	1	2	1	1	0	2	3	0	2	1	1	0	1	0	0	0	0	0	1	1	0	0	1	0	1	1	0	1	0	0	1	1	0	1	0	2	0	0	0	0	0
013	1	2	0	1	1	1	2	2	0	0	0	0	0	0	0	0	0	0	0	2	0	1	0	1	0	0	1	0	0	0	[illegible]	0	0	0	1	1	0	0	0	0	0	[illegible]
014	0	3	1	0	2	0	1	1	0	1	0	1	1	1	1	1	1	1	1	1	3	1	1	1	2	1	1	0	1	1		1	0	0	3	1	1	[illegible]	1	1	1	1
015	0	4	0	1	0	0	1	1	0	1	0	0	1	0	1	1	0	1	0	1	1	2	0	3	1	1	0	0	0	0	1	0	0	0	4	1	1	0	0	1	0	1
016	0	1	1	0	1	0	0	1	0	2	1	1	0	[illegible]	2	0	1	0	0	1	1	0	0	0	1	1	0	0	0	0	0	0	0	0	2	1		0	0	0	0	1
020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
021	0	3	0	0	0	0	3	0	0	0	0	0	0	2	1	0	0	0	2	0	2	1	0	1	2	1	0	1	1	1	[illegible]	0	0	0	0	0	2	0	0	0	0	1
022	2	5	7	2	3	3	5	2	4	1	3	2	3	8	3	3	4	6	4	2	3	6	5	5	4	5	2	4	3	3	6	5	4	4	5	3	5	0	3	7	4	2
023	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	[illegible]	0	0	2	1	0	0	0	1	1	1	0	0	0	0	1	0	0	1	1	1	0	1	0
030	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
031	1	5	3	1	3	0	2	1	2	3	1	0	2	3	3	0	2	0	0	0	2	2	0	1	2	1	0	0	1	1	[illegible]	0	1	1	2	2	2	2	0	2	1	0
032	2	1	1	0	1	1	1	1	1	0	3	1	3	0	2	0	1	1	1	0	2	0	3	0	0	1	2	3	1	1	[illegible]	1	0	1	0	0	3	1	2	0	1	1
033	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
034	0	1	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
035	1	2	0	1	0	0	2	1	1	1	1	0	0	3	1	2	2	1	0	0	1	1	1	0	0	0	0	2	3	1	1	0	1	0	0	0	1	1	0	1	0	1
040	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
041	2	0	2	1	0	1	1	1	1	2	1	2	4	0	1	2	2	1	1	0	2	1	3	1	2	1	2	2	1	1	1	2	1	2	0	2	1	1	1	2	1	0
042	2	1	1	0	0	1	0	1	1	2	1	0	0	2	1	1	0	0	0	0	1	0	0	1	1	1	2	0	1	1	2	1	0	1	0	1	0	0	0	1	0	0
043	5	6	4	2	5	4	4	4	4	5	3	2	3	6	3	4	4	2	5	7	7	3	7	4	7	4	5	5	5	3	[illegible]	2	2	4	3	1	3	3	3	3	4	2
044	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
045	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
050	0	0	6	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0
051	3	2	5	5	2	4	8	3	1	1	1	0	2	1	7	1	4	2	9	5	2	4	2	2	2	3	1	2	1	3	3	1	0	3	5	4	1	1	1	2	1	3
052	0	1	1	0	0	0	2	0	0	0	0	0	0	1	0	0	0	0	3	2	0	1	0	0	1	0	0	0	1	0	0	0	0	0	2	2	0	0	0	0	0	1
060	2	0	1	1	0	1	3	0	1	0	1	1	1	1	1	1	0	2	1	2	0	1	1	1	2	2	2	1	1	1	1	1	0	1	3	2	2	0	1	1	0	1
070	1	2	4	1	1	3	2	3	2	2	2	1	3	2	1	3	1	3	4	1	0	2	1	3	4	4	1	3	2	1	2	2	2	2	1	1	3	0	1	2	5	1
080	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	2
081	1	1	1	2	0	1	4	1	1	0	1	1	1	2	3	0	1	1	2	2	0	1	3	1	0	3	4	1	0	1	0	2	0	0	1	2	0	0	1	1	0	2
082	0	0	1	0	0	1	1	0	0	0	0	0	0	0	1	1	0	0	1	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
090	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1
091	1	0	1	1	0	1	0	0	0	2	0	0	0	1	1	1	0	1	1	0	0	1	1	1	1	1	1	1	1	1	1	[illegible]	0	1	0	1	1	1	0	0	0	0
092	0	0	1	0	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
093	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
094	0	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	0	2	0	0	1	4	0
095	0	2	2	1	2	0	1	0	0	0	0	0	1	0	0	0	1	0	2	2	1	0	0	0	1	1	0	1	0	0	0	1	0	0	0	2	0	0	0	0	0	1
096	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0	0	0	1	2	2	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
097	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
098	2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	0	0	1	1	0	0	0	0	0	1	0	0	0	3	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1
101	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	4	0	0	0	1	0
102	1	2	2	1	1	1	1	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	0	2	1	1	0	1	1	1	1	0	1	1	0	1	1	1	1	1	1
103	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
104	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
105	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	[illegible]	0	0
106	0	0	1	0	1	0	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	[illegible]	0	0	0	0	0	0	[illegible]	0	[illegible]	[illegible]
110	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	[illegible]	0	1	0	0	0	0	[illegible]	[illegible]	0	[illegible]
111	2	2	2	2	2	0	0	1	1	2	1	1	2	2	0	1	1	2	2	2	2	1	2	3	1	2	2	1	1	[illegible]	2	1	1	0	2	2	1	2	[illegible]	1	1	[illegible]
112	1	2	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	2	1	1	1	1	1	1	1	1	1	1	0	1	0	1	0	1	0	1	3	0	1	1	1	1
113	1	3	1	1	1	1	2	1	0	1	1	1	1	2	1	0	1	1	1	1	2	1	1	2	1	1	1	1	1	1	1	1	0	2	1	2	3	1	[illegible]	[illegible]	1	1
114	1	2	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	[illegible]	1	1	1	[illegible]	1	0	[illegible]	0	1	0	0	0	1	[illegible]	0	[illegible]	1	1	1
115	0	1	0	1	0	0	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	[illegible]	0	0	0	0	0	0	1	0	[illegible]	[illegible]	0	0
116	0	4	0	1	1	1	2	1	1	1	2	0	0	0	1	1	0	0	0	3	1	2	0	1	4	1	0	0	0	1	0	0	1	0	4	2	2	2	[illegible]	1	0	1
120	5	2	5	2	3	3	4	4	2	4	4	3	3	4	2	2	2	3	4	2	4	2	4	3	5	2	7	1	[illegible]	2	[illegible]	[illegible]	1	2	8	7	6	[illegible]	[illegible]	[illegible]	3	3
130	1	1	2	1	0	0	0	1	1	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	1	1	2	0	1	0	0	0	0
140	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	[illegible]	[illegible]	0	0	0	[illegible]	0	0	0	1	1	[illegible]

LE IV. DATA MATRIX: SCHOOL VS. COURSES

ol Identification Numbers

31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74
1	1	[illegible]	2	2	[illegible]	0	0	0	0	0	1	1	1	2	1	1	1	1		1	2	0	1	0	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	1	1	1	2
1	1	1	1	2	[illegible]	3	2	3	1	3	1	1	4	0	0	1	2	1		1	2	1	0	0	1	1	0	2	0	1	2	1	3	1	1	1	0	2	1	1	0	[illegible]	1
1	1	0	1	0	2	0	0	0	0	0	1	0	0	[illegible]	0	0	1	0		0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	1	0	1	1	0	1
0	0	0	1	1	0	0	0	0	0	[illegible]	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	[illegible]
1	0	0	3	1	1	[illegible]	1	1	1	1	1	1	0	0	0	0	0	0		0	1	0	1	0	1	1	0	1	1	0	2	0	0	1	0	1	0	1	1	0	0	0	0
0	0	0	4	1	1	0	0	1	0	1	1	0	0	0	0	0	0	[illegible]		0	1	0	1	0	1	1	0	1	1	0	1	1	0	0	1	0	1	0	0	0	0	0	[illegible]
0	0	0	2	1	[illegible]	0	0	0	0	1	0	0	1	0	0	0	1	0		0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	0	[illegible]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	[illegible]	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0
5	4	4	5	3	5	0	[illegible]	7	4	2	3	0	4	1	0	0	3	4	[illegible]	3	3	1	1	0	1	4	2	4	1	2	3	2	3	1	2	1	3	3	3	3	1	2	1
0	0	1	0	0	1	1	1	0	1	0	0	0	0	0	3	0	0	0	[illegible]	0	0	1	1	0	1	2	2	0	1	2	1	1	0	0	2	0	2	0	1	1	1	0	0
0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	[illegible]	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
0	1	1	2	2	[illegible]	2	0	2	1	0	1	1	1	2	1	1	2	2	1	2	0	0	1	1	0	0	0	1	0	1	0	1	1	1	1	1	0	0	1	2	0	1	0
1	0	1	0	0	3	1	2	0	1	1	0	0	1	1	0	0	1	0	1	1	0	4	3	0	3	0	3	0	1	1	1	1	9	3	0	1	1	1	0	0	4	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0	[illegible]	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	1	1	0	1	0	1	1	0	1	[illegible]	0	0	1	0	1	1	0	0	0	0	1	0	0	1	0	0	1	1	2	0	0	1	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	[illegible]	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
2	1	2	0	2	1	1	1	2	1	0	2	1	1	0	0	1	1	1	1	2	1	1	1	1	0	1	1	1	1	1	1	0	1	2	4	1	1	1	1	0	2	1	1
1	0	1	0	1	0	0	0	1	0	0	0	1	1	0	0	0	0	1	[illegible]	1	0	0	0	1	0	0	0	1	1	0	0	1	0	1	0	2	0	1	0	0	0	1	0
2	2	4	3	1	3	3	3	3	4	2	2	2	4	1	2	2	0	4	[illegible]	4	5	2	1	3	6	2	1	2	2	2	1	2	6	3	3	4	4	3	3	2	0	3	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	[illegible]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	[illegible]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	[illegible]	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1	0	3	5	4	1	1	1	2	1	3	0	1	6	1	0	1	4	1	0	0	0	1	0	0	0	0	0	0	0	0	2	1	1	1	0	3	0	3	1	2	1	1	3
0	0	0	2	2	0	0	0	0	0	1	2	1	2	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0	1	0	0	0	0	0
1	[illegible]	1	3	2	2	0	1	1	0	1	1	2	4	0	0	0	1	1	1	1	2	1	0	1	0	1	0	1	2	0	1	1	0	1	1	0	0	1	0	1	0	1	1
2	2	2	1	1	3	0	1	2	5	1	0	0	3	1	2	0	1	1	1	1	8	3	1	1	4	3	4	1	2	1	2	0	0	1	3	2	3	2	2	1	4	1	1
0	0	1	0	0	1	0	0	0	0	2	0	1	1	0	0	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	2	0	0	1	0	0	0	1	0	0	0	0	0
2	0	0	1	2	[illegible]	0	1	1	0	2	1	1	3	0	0	1	0	1	[illegible]	0	0	1	1	0	0	2	0	1	2	0	2	2	0	0	0	0	0	2	0	1	0	2	0
0	0	0	1	0	0	0	0	[illegible]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
0	0	0	[illegible]	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
[illegible]	0	1	0	1	1	1	0	[illegible]	0	0	1	1	1	0	0	0	0	1	1	1	0	1	0	0	0	1	0	1	0	0	0	1	0	1	1	0	0	1	1	1	0	1	1
0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
0	0	0	1	0	2	0	0	1	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	3	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	1	0	1	3	0	1	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	4	0	0	[illegible]	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
[illegible]	0	1	1	0	1	1	1	[illegible]	1	1	1	1	1	0	0	0	0	1	1	1	1	0	2	0	0	0	0	1	0	1	1	0	0	1	0	0	0	1	1	1	1	0	0
[illegible]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
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0	0	0	0	0	1	0	0	[illegible]	[illegible]	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0
0	0	0	0	0	0	0	[illegible]	[illegible]	0	[illegible]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[illegible]	0	1	0	[illegible]	[illegible]	0	[illegible]	[illegible]	[illegible]	[illegible]	0	0	[illegible]	[illegible]	[illegible]	0	1	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	[illegible]	0	2	2	1	2	[illegible]	[illegible]	1	[illegible]	3	[illegible]	[illegible]	0	1	2	1	1	1	3	2	1	1	1	1	1	1	2	2	2	2	0	3	2	1	1	1	1	1	0	2	1	1
1	0	1	0	1	3	[illegible]	[illegible]	1	1	1	0	1	1	1	[illegible]	1	1	1	[illegible]	1	1	0	1	1	0	0	0	1	1	1	1	1	0	0	0	1	0	1	1	1	0	1	1
1	0	2	1	2	3	1	[illegible]	[illegible]	1	1	[illegible]	[illegible]	[illegible]	1	[illegible]	1	1	[illegible]	1	1	1	0	1	1	0	0	0	1	1	1	1	1	0	0	0	1	0	1	1	1	0	1	1
[illegible]	0	0	0	1	[illegible]	0	[illegible]	[illegible]	1	1	[illegible]	1	[illegible]	1	[illegible]	1	1	1	[illegible]	1	0	0	1	1	0	0	0	1	1	1	1	1	0	0	0	1	0	1	1	1	0	1	1
[illegible]	0	0	0	0	1	0	[illegible]	[illegible]	0	0	0	[illegible]	[illegible]	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	1	0	4	2	2	2	[illegible]	1	0	1	0	0	2	[illegible]	[illegible]	1	0	0	[illegible]	0	0	0	0	1	1	0	0	0	1	1	0	1	0	1	1	0	0	0	0	0	1	0	2
3	1	2	8	7	6	2	[illegible]	[illegible]	3	3	[illegible]	2	[illegible]	[illegible]	[illegible]	2	1	2	[illegible]	1	2	1	2	1	1	3	1	3	2	2	3	1	1	2	3	2	1	2	2	1	1	2	2
0	0	1	1	2	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	[illegible]	[illegible]	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
1	0	0	0	[illegible]	0	0	0	1	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	0	0	0	[illegible]	[illegible]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0

offerings are different, the value of the correlation coefficient is reduced to some decimal fraction less than 1.00.

The complete intercorrelation matrix contains over 2500 correlation coefficients. It is quite large, unwieldy, and in its raw form difficult to interpret. It has, therefore, not been reproduced, although it can be recalculated from the data in Table IV.

The prime purpose of the intercorrelation matrix is to serve as a data base for processing by factor analysis. Nevertheless, a careful study of the correlation coefficients yields some suprising information. It was curious to note that some of the large accredited schools correlated rather poorly with each other, e.g., Catholic University Library School, (#1) correlates .43 with Columbia (#2). At the same time there are high correlations between some large and small institutions, e.g., Catholic University correlates .84 with Rosary College (#27), .73 with the University of Rhode Island (#50), and .75 with St. John's University (#51). This phenomenon is explained by a more detailed study of the curricula. The larger schools tend to offer a choice of many and varied courses; they are designed to be different, i.e., to stress particular and, if possible, unique areas of distinction. On the other hand, small schools offer fewer courses, and what they do offer may be quite similar to what is offered by the larger accredited schools.

Although the results make sense, as indeed they must, the correlation patterns are unusual and unexpected. This was the first indication of the difficulties that would later develop in interpreting the results of the factor analysis .

Cluster Patterns

In this study, factor analysis was used to uncover the few basic dimensions that might characterize the wide diversity of library schools. Library educators are currently using a set of logical and intuitive characteristics to describe types of library schools. For example, there is a group of accredited schools and a group of non-accredited schools; there is a regional grouping--Northeast, Southeast, Midwest, West and Canada; there are groupings based upon areas of specialization, such as school librarianship, information science, etc. We hoped that factor analysis would reveal these and other kinds of clusters, derived mathematically, and would allow us to explore the degree to which the traditional types of library schools are reflected as factors in computation.

The process of factor analysis begins with the table of intercorrelations. Factor analysis strives to reduce the rank of matrix (the number of columns, in this example 75) while retaining the bulk of the information contained in the data. It does so by calculating the roots of the matrix, called eigenvectors. Using generally accepted decision rules, it was determined that this particular matrix could be reduced to a rank of five, and that the five eigenvectors would account for slightly more than 70% of the total variance, or usable information, in the matrix. Finally these five vectors, which have arbitrary reference axes, were rotated into a more meaningful configuration. In the calculated rotations, each vector is placed perpendicular to the others in a five dimensional orthogonal space. The schools of library science are considered as points in this five dimensional space, and they can be located precisely by measuring their distance on each of the axes from the origin of the coordinate system. These measured distances are called the factor loadings.

The factor loadings for high values only (greater than .50) are shown in Table V. The fifth factor has no values above .50, and is therefore not included in the table. The lack of high loadings on the fifth factor was a desired outcome, and indicated that after rotation, the meaningful data could be described by four rather than five factors or dimensions.

It should be said here that while the extraction of the eigenvectors and the calculation of the factor loadings are based upon precise mathematical concepts, the interpretation of the factors is more art than science. Thus, while the five-factor solution of the matrix, the rotation of the factors, and the loadings on the remaining four factors could be replicated precisely by different investigators, the attribution of meaning to the factors would be expected to vary with the investigator and his particular frame of reference.

In interpreting the factors it must be remembered that all of the analysis is based upon the table of intercorrelations which is based upon the course descriptions published in the catalogs of the different library schools. These data are ambiguous and no amount of sophisticated calculations can make them more precise. Furthermore, as was pointed out, the larger pace-setting schools tend to accentuate their differences while emphasizing unique course configurations. This phenomenon reduces expected correlations between the library schools. Conversely, smaller schools try to increase their prestige by imitating the course structure of large schools; their correlations become unexpectedly high. All of these forces tend to muddy the meaning of the correlation coefficients and make the interpretations of the factor analysis difficult and subjective.

One way of looking at this factor analysis is to think of it as a map describing a previously uncharted territory. The first maps will undoubtedly be poor and likely to contain errors. Nevertheless even an imperfect map is better than none at all, and it is only because of these initial attempts that later improvements could be made.

Recognizing all of these limitations, the factors were interpreted by first examining the curriculum variables associated with high loadings on a particular factor, and then considering the common elements which distinguish one factor from the others. Since one of the purposes of this study was to verify the currently accepted groupings of library schools by examining the degree to which they appeared as factors, we tried to use these concepts in interpreting the factors.

Without going into excessive detail, the derived factors were interpreted as follows:

Factor #1: Common Core Curricula

Factor #2: Information Science Emphasis

Factor #3: Unidentified

Factor #4: School Librarianship Emphasis

All of these factors were mixed, in that they were made up of both accredited and non-accredited schools, private and public institutions, both large and small, and represented all areas of the North American continent. The factor analysis did not separate the schools into these accepted groupings. The factors that appeared were closely linked to the curricula either toward an emphasis on information science or school librarianship, or general core program. One of the four factors was not interpretable, and even those that were, needed to be interpreted cautiously until validated by additional studies.

5. Conclusions and Recommendations

At the time this study on an analysis of current library schools curricula was planned, a number of questions were posed. They are now answered in this concluding section.

1. Conclusions Relating to Curricula

Question: Can similarities, differences, strengths, gaps, and innovative elements in current library school curricula be identified by means of the approach specified for this study?

A major obstacle in the way of comparing the curricula of different schools was the variations in naming and describing courses in the catalog. The Library School Curriculum Classification Schedule was created to overcome this obstacle and it provided a basis for making the kinds of comparisons needed. By using classification categories instead of course titles, one can identify both similarities and differences--including unique aspects--in library school curricula. The Data Table (Table IV) provided a simple and effective means of identifying those schools that offer many courses in a given subject and those schools that specialize in a certain area of librarianship. However, the question of whether particular courses and programs represent "strengths" requires the use of criteria and value judgements that are considerably beyond the scope of the present study.

Question: Can one identify a core curriculum?

If a core curriculum is defined as those courses that are taught in all or almost all schools of library science, a core curriculum can easiy be identified by means of the Data Table, which shows that there does seem to be a set of course types that are basic to all library schools. This notion of basic or core courses was also supported by the factor analysis.

Question: Can one identify the schools offering specialized or innovative courses?

The Data Table identifies schools that teach the specialized courses included in the Classification Schedule, e.g., Newspaper Libraries. However, the identification of innovative courses is not as easy. The term "innovative course" may have many connotations; it may indicate an unusual course, a standard course taught in an innovative fashion, or an innovative program consisting of a number of courses. These kinds of innovations could not be identified by the simple descriptive procedures used in this study. Innovations, when used qualitatively, must be identified by a qualitative analysis, and this was not part of the present study.

2. Conclusions Relating to Groups of Schools

One of the questions posed at the outset of this study was whether the logical divisions made in grouping library schools would be verified and supported by a mathematical analysis of their curricula, e.g., whether commonly used characterizations of library schools, such as accredited and non-accredited, public and private, Eastern and Western, having a doctoral program and not, specializing in information science and not, etc., would be confirmed and supported by factor analytic clustering of library schools.

The clusters of schools derived by factor analysis did not support the a priori distinctions, such as those between regions or between accredited and non-accredited schools. No regional patterns were found, nor any clear indication of systematic differences between public and privately supported institutions. The analysis did not identify any patterns of superiority or inferiority, nor did it distinguish the schools offering doctoral programs from those that gave terminal Master's dejees.

Three positive findings emerged from the factor analysis. First, there is a core curriculum of course content that is offered by nearly all schools in the study. The classification of course descriptions may have obscured some of the commonality because of the broad variation in the content of particular courses, but the factor is well defined. A second factor clustered those schools that showed a strong emphasis on information science courses. A third factor, though less well defined, seemed to revolve around a concentration on school librarianship. The fourth factor was not interpretable.

The factor analysis indicated that the identifiable trends in library school education that were sufficiently well developed to serve as a basis for differentiating schools were concentrations on the teaching of information science and on school librarianship. All other areas of specialization seemed to be too narrow and the course offerings too few to serve as a basis for dividing and categorizing schools. This was a significant finding. It meant, for example, that there was more commonality between accredited and non-accredited schools than one might have expected; it meant that schools offering a doctoral program did not differ significantly in curricula from schools offering a terminal Master's degree; it meant, in essence, that library schools have more commonality than differences.

3. Recommendations

It is recommended that the course offerings of all accredited and the major non-accredited library schools be tabulated and compared on an annual basis. This information is important to students considering entering library school, to educational counselors, administrators, and prospective employers. While recognizing that this type of comparison is currently being done by the Association of

American Library Schools, it is recommended that the work be expanded and continued along the lines of the present study.

In this study on the analysis of library school curricula, two new tools were developed: The Data Table and The Curriculum Classification Schedule. These tools are useful for they facilitate the comparison of course offerings between schools. It is recommended that those tools continue to be used and refined.

If it is desirable to group and classify library schools, then some more formal technique should be developed. The kind of factor analysis used in this study was not found to be sufficiently discriminatory nor was it productive of important new insights. New techniques, perhaps involving the use of more qualitative data, need to be investigated and new taxonomies need to be studied.

Innovation must be based on the present state-of-the-art. This study supplies information on the current practice of library school education and is the first phase in a program to bring about changes and improvements.

PART II

RESEARCH NEEDS

While it is all very well to look at the current scene and to achieve an understanding of what library schools are teaching today, we must also look beyond current practices and determine the deficiencies that exist and the changes that should be made in order to meet the challenges that lie in the future. New information is needed so that improved educational programs could be based on facts rather than on hunches, and research is needed to gather the information.

Our field does not lack research ideas. One can start almost any place, select any topic and design a study that could provide useful information. However, manpower, time and funds are not in infinite supply. Some coordination is needed to select the important problems--those that require attention now. To identify these significant problems, ten areas in library and information science education were selected and subjected to intensive analysis by competent authorities. These individuals were asked to write opinion papers--

(1) that would identify the problems inherent in the topic under discussion;

(2) that would identify the information needed in order to answer the questions being asked, to solve the problems that need to be solved and to provide a basis for choosing between alternative courses of action;

(3) that would identify the kinds of research that should be undertaken in order to provide the needed information;

(4) that would speculate on the effect that these research programs could have and how the accumulated data could be utilized to improve the effectiveness of library school educational programs.

In preparing these opinion papers, the authors were not asked to provide solutions but only to identify the problems, the research, and the possible applications to library education.

The ten papers that resulted from these efforts are important contributions for achieving a better understanding of the problems and prospects of library education. In preparing these materials for publication, an effort was made to achieve a certain similarity in their organization and structure, although rigid conformity to an arbitrary format was not required. Each author has his own style and the individual forms of expression are preserved in their writings. The reports are not prefaced by any editorial comments, for such explanations would be both presumptuous and superfluous. The papers speak for themselves, and they merit serious study.

PART II SECTION A: GOALS AND CURRICULA

CHAPTER II

RESEARCH NEEDS RELATING TO THE AIMS AND CONTENT OF GRADUATE LIBRARY EDUCATION

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ABSTRACT

The author surveys the literature of research in education for librarianship and finds it, like the literature of research in higher education itself, largely unproductive. Moreover, he takes the position that innovation in library education has come, not from research, but from the influence of certain strong individuals who have applied their imagination and accumulated wisdom to the educational problem.

The author therefore concludes that improved education for librarianship does not need research so much as it needs support for the building of a strong faculty, the attraction of outstanding students, and the resources for experimentation. Particularly important is the need to strengthen the dialogue with scholars in related subject disciplines so that the results of their innovations and discoveries can be applied to library education.

DEFINITION AND SCOPE OF THE PROBLEM

To understand the research needed in the aims and content of graduate library education one must begin with some agreement respecting the meaning of research and an understanding of what graduate library education is and what its aims and objectives are. Research may be defined as the systematic attempt to discover new facts, or sets of facts, or new relationships among facts through the formulation of a preliminary explanation, or hypothesis, which is subjected to an appropriate and objective investigation for validation or disproof in terms that are generalizable. (Shera, 1964) The aim of graduate education in librarianship, which must define the content of the program of study, is to provide graduate students with the appropriate knowledge and skills to enable them to perform in a satisfactory way as professional librarians. The term professional librarianship is understood to include practitioners, teachers in library education, and research investigators of library problems. Thus, one can say with considerable validity that the aims of graduate library education, in the final analysis, are the goals of librarianship itself, or even more simply, to prepare students to do what librarianship does. Thus the task of research in library education is to discover the best ways in which to prepare students for their professional career by providing valid evidence to prove that such ways are optimal given the existing state of knowledge of higher education and librarianship.

But neither higher education nor librarianship has been particularly disposed to engage in research about itself. Higher education, it may be observed, has studied almost everything except higher education, while librarianship has never been research-oriented. Indeed it would be very difficult to show that librarians, by and large, have assumed any general responsibility for the clarification of the specific professional issues that confront them as distinguished from a vague abstract concept of "service". The classification of library literature that Ralph A. Beals (1942) set forth more than a quarter of a century ago is still valid today. Writings about librarianship, he told an audience at the the University of Chicago, fall into three major categories: Glad Tidings, which are of two kinds, "speculative essays of what might, could, would, or should be true . . . and announcements, more or less unvarnished, of something about to be done or very recently undertaken, like the 'apostle's faith', they are the essence of things hoped for--the substance of things unseen;" Testimony was used by Beals, not in the legal sense but "in the sense commonly associated with religious sects, retrospective accounts of something done or benefits conferred . . . often, though not always, cast in the first person plural." Research has no relation to the presence or absence of statistics but which includes, said Beals, "any study in which a problem is defined and analyzed into its constituent parts in which valid data are collected and related to relevant factors, in which hypotheses are formed and, through testing, rejected, amended, or proved . . . offers acceptable credentials as research." Regrettably, in both education and librarianship the credentials that research has attempted to offer are not very impressive, and in attempting to lay the foundation for inquiry into the aims and curricula of the library school one is, in a sense, going counter to a well-established historical trend.

Very much in the Beals tradition, Philip Ennis (1967) has charged that today's library research, such as it is, is noncumulative, fragmentary, weak, and oriented to immediate practical ends. As remedial measures he proposes that there be a real commitment to the research enterprise by library educators and administrators. Such a dedication would imply important changes in the relationship between the knowledge base and the service orientation; the strengthening of the research sensitivity of the school and public library; and the building by library schools of research-oriented faculties. He suggests three areas that are particularly in need of investigation: the measurement of library performance, analysis of the uses of print, and the theory of the organization of knowledge. However, he does not mention inquiry into library education itself.

HISTORICAL REVIEW

At a time when library education was represented only by apprentice training, in public libraries, and even in the first library schools, there was scant opportunity and little need for inquiries into the effectiveness of such technical preparation for staff appointment. The goal, then, was simple--to train librarians in the elementary skills needed to perform their largely routine duties, and the only real test of the worth of the instructional program was whether or not the "graduate" could do his work when he assumed the responsibility of a job. Standards of performance in those days were simple, subjective, and largely idiosyncratic.

Sarah Vann (1961) in her history of professional library education before 1923, describes some sporadic attempts at the beginning of the present century to examine into the state of the few existing library schools and even attempts to apply some educational standards. However, the earliest really significant attempt to examine the state of library education was embodied in a report prepared in 1916 by Alvin S. Johnson for the Carnegie Corporation of New York. The report sought to provide a policy for the Corporation's donations to free public libraries. Johnson examined the thirteen library schools then in existence, of which he regarded only about half as being of much importance. He deplored the excessive emphasis upon technical training superimposed, as it was, on nothing more than a high school education. Though one can scarcely characterize the Johnson report as a major research undertaking in library education it is important because it drew the attention of the Carnegie Corporation to the need for a serious and major investigation of library education and thus paved the way for the famous Williamson report (1923) some seven years later, and which still remains, despite the passage of time, the single best study of library education. The Williamson report is so well-known, and it has been so widely summarized and discussed in the literature of library education, that it is sufficient here to point out that it was a serious and extensive inquiry, buttressed by a substantial amount of statistical evidence, into the state and condition of library education in the third decade of the present century. Its research methods, however, were directed entirely upon the _status quo_; its recommendations, sound and intelligent as they are, were highly personal. Williamson took a hard look at library education and then drew his own conclusions concerning what should be done about it. Moreover, the method of inquiry itself was relatively simple and unsophisticated, but so was library education in the 1920's.

What could be regarded as the first major attempt to apply the findings of research to library education programs, is the job analysis study inaugurated in 1925 (Charters 1927). Briefly stated, the object of the investigation was to conduct a very intensive study of what librarians do in various library operations, the tasks they perform, the knowledge needed to perform such duties, and the kind of personal attributes needed for success. From this massive collection of data, and with the assistance of a substantial number of advisory practitioners, a series of texts for teaching in library school was prepared by appropriate authorities in the several fields of librarianship. The first test to be prepared in this fashion was Jennie M. Flexner's volume on circulation work in public libraries which appeared in 1927, but probably the best known today is that on cataloging by Margaret Mann, and that of Lucile Fargo on the school library. As one might expect, these texts were hardly inspiring, but were heavily oriented to operations as they were practiced at the time of the study, and in no way did their authors seek to identify future trends. Nevertheless, some of the texts, notably Mann, went through more than one edition, and dominated much of library school instruction to the close of the Second World War. Indeed *Mann* and *Fargo* still appear on supplementary course reading lists.

But the event that may properly be characterized as the most important and influential single development in library education since the publication of the Williamson report, if indeed not the most important event in the entire recent history of library education, was the establishment in 1926, through a grant from the Carnegie Corporation, of the Graduate Library School at the University of Chicago. But it arose out of no basic research into the character of librarianship, much less library education, or even of any survey of needs. The School came into being largely because of a hunch, a subjective conviction, on the part of Carl Milam and other influential librarians in the Chicago area, that library education needed a program of advanced study, especially one that terminated in the doctorate, and it needed such a program to maintain academic and professional respectability.

The founding of the School, which, after lengthy negotiation, was accepted with reluctance by the administration at the University of Chicago, touched off a controversy, which lasted for a decade or more over the nature of advanced study in the library world. The program as envisaged by its first dean, George A. Works who came to the new post from the Department of Education of the University of Chicago, was represented by an almost completely unstructured curriculum in which a limited number of carefully selected and experienced students worked privately with the faculty on problems of major importance in librarianship. But the question immediately arose of the nature of the theses problem. The answer, at first, seemed to lie in the humanities, particularly the history of books, printing, and libraries.

It was the arrival in 1932 of Louis Round Wilson as dean, that brought the School to its position of pre-eminence and influence (Tauber 1967). Wilson, again without benefit of research, but richly endowed with experience as librarian of the University of North Carolina, saw librarianship as a part of the communication processes in society and therefore one must look, he believed, to the social sciences, rather than the humanities, for the intellectual foundations of librarianship and for guidance in curriculum development. As a result, more than a score of books poured from the press of the University of Chicago representing both faculty and student research on the social effects of reading, communication, library government and administration, the geography of reading, library service to the underprivileged, the history of libraries sociologically interpreted, and the philosophy of librarianship.

This is not the place to detail the history of the School that came to be known affectionately by its alumni as "The GLS", but it is important to point out as emphatically as possible that the great growth and influence of the School, unparalleled in the history of library education, came not because of research in the theory of professional education in librarianship, but because a small group of intelligent men intuitively knew what needed to be done and set themselves and their students to burrowing like rabbits all over the library terrain. To state the situation another way, the School did not grow out of any formalized statement of objectives based on inquiry; the objectives grew, quite literally, out of the School. In higher education as in everything else, there is no substitute for wisdom, and the best research in the world can not compensate for its absence. One should, of course, warn against the danger in arguing from a special case, but in the history of higher education the Wilson achievements are not a special case; philosophically they are one with Harvard under Eliot, Cornell under White, Chicago under Hutchins, and many other such "special cases". One might call this "the Great Man theory" of educational reform.

Ernest J. Reece of the Columbia faculty, performed a monumental chore in bringing together a mass of material respecting the curricula in library schools in the 1930's (Reece 1936). The volume is rich in flashes of insight but the author did not evolve a model curriculum, or even present in any systematic way the real meaning of his findings or the ways in which they might be implemented for the improvement of library education. Reece was on the right track, and he set about his task in the right way, to collect the information that would be essential to decision-making in library education, but, perhaps because the book does not give up its wisdom readily and the reader must thread his tortuous way through a labyrinth of detail, one finds little evidence that it had any real impact or initiated an educational revolution as it should have done. Five years after the publication of his study Reece complained that there had been relatively little change in the substance of library education programs in the fifty years of their history, that inexcusable weaknesses still existed in the organization of curricula, and, most important of all, that modifications were mandatory in the light of changing practices in the field. He therefore set forth certain avenues of development that might profitably be followed in curricular revision (Reece 1943). Again, however, one must report that though both studies were widely quoted in subsequent writings about library education, it is difficult to discover any tangible results in library school practice.

In reviewing the research in library education published between 1957-63, Reece (1965) found only a slight numerical increase in such publication over that of previous decades, and added cautiously, "At that there may be enough to offset the predominance of unsupported opinion and conviction common previously". But one finds it difficult to escape the belief that he is trying to make the best of a sorry picture.

In 1941, at the request of Carl M. White, then director of the University of Illinois library school, a team of three investigators, John Dale Russell of the Department of Education at the University of Chicago, Keyes D. Metcalf, director of the Harvard University Library, and Andrew D. Osborn, chief of the Catalog Department of the same university, initiated an intensive study of the Urbana school as seen against a backdrop of ideals and standards in library education as they then existed (Metcalf 1943). Despite the influence of the Board of Education for Librarianship and the progress reported by Ralph Munn (1936), Louis Round Wilson (1937), and Helen F. Pierce (1941), the investigators were disposed to agree with Wilhelm Munthe (1939) that the instructional program was still far behind advances in other areas of librarianship. As a result of their study they found serious deficiencies in the training and qualifications of the instructors; too much of the School program was elementary; and the absence of a philosophy of librarianship deprived the program of depth and focus. The objectives of library education, Metcalf and his associates believed, were three-fold: to make clear the principles according to which libraries function; to impart the techniques and skills used in libraries; and "to promote professional understanding and standards." Fullfillment of the first objective must necessarily wait upon the development of a philosophy of librarianship; the third is the responsibility of courses in library administration and history, which suffer from an excess of the inspirational and the sentimental; while it is in the second that the greatest degree of success has been achieved.

By the close of the Second World War the literature of education for librarianship began to increase rapidly in volume, but there was little improvement in depth. Leigh's survey of library education for the Public Library Inquiry has already been noted, and in 1948 the Graduate Library School at Chicago sponsored a conference on the implications of the _Public Library Inquiry_ for library education, but the proceedings were little more than a collection of personal reactions of varying degrees of perception, none of which could qualify as being the results of research (Berelson 1949).

By the late 1940's, practically all of the library schools had converted the original BLS, which had been a fifth-year degree conferred as a graduate degree, to the

Master of Library Science, but the change was largely one of nomenclature rather than substance, a practical response to the growing criticism among library school graduates that they were being penalized in competition with those who had received the Master's degree for study in a subject field. Certainly the change was not the result of any serious inquiry into its rationale, or even any attempt, except here and there a sporadic addition of a course in research methods, to enrich the instructional program in ways that would make it more truly graduate in character. Indeed, not many years were to pass before the Master's thesis, or paper, was either dropped entirely or given optional status. Again the decision was based solely upon expediency and the very practical necessity, forced by rising enrollments, to maintain teaching loads at a reasonable level.

Louis Round Wilson retired from the deanship at Chicago in 1942, and the School entered a slow but steady decline from which it has never recovered. Unfortunately for library education, though in the 1950's and 60's other schools began to institute doctoral programs of highly varying degrees of excellence, the leadership from Chicago was gone, and there was nothing to take its place. Joseph L. Wheeler, in his survey of library education prepared for the Carnegie Corporation, (Wheeler 1946) viewed with some concern the changes at Chicago and expressed the hope that it would eventually return to its original position of influence. Wheeler's study, which was impressionistic rather than statistical, did little more than reiterate the Williamson criticisms: curricula are overburdened with detail, teaching is elementary, and the schools generally are unresponsive to the needs of the profession. He even went so far as to recommend that certain of the weaker schools be discontinued, and the strong ones be given increased support. But the librarian from Baltimore revealed his essential conservatism when he concluded his study with:

> There is no quick answer to education for librarianship. The old-fashioned idea of discipline and hard work is valid still. In 1946, just as in the past we need a sincere conviction that books, reading, study, and thinking are the foundations of progress; that knowledge and love of books make the keystone to librarianship. If librarians are so persuaded, then libraries will be better prepared to serve their function in society.

One could scarcely find a statement that better illustrates the weaknesses in library education from the days of Melvil Dewey's first school to the present day.

The Public Library Inquiry, which was supported by the Carnegie Corporation and attracted such wide-spread interest in the library world during the late 1940's, devoted a substantial amount of attention to library education. Robert D. Leigh, who was the director of the *Inquiry*, also conducted the investigation into the state of the library schools, their objectives, course offerings, faculty, students, and financial support. His report (Leigh 1952) opened with a concise review of the history of education for librarianship in the United States, followed by an intensive statistical investigation of the accredited library schools that compares favorably with that of Williamson, though it never received the wide-spread acclaim accorded the latter. Leigh found a great diversity among the schools in almost all aspects of library education despite the growing efforts of the Board of Education of the ALA and the schools themselves to establish and maintain standards. Yet, he concluded that when viewed historically the trend in instructional resources "is distinctly favorable", by which he, at least, implied that considerable progress had been made since the days of Williamson. "As for the actual curriculum," he wrote, "in the newer library school programs, the prevailing pattern of courses seem to be aimed at educating librarians to meet the personnel needs defined by the official objectives." He also noted a significant decline in emphasis upon specific details and techniques, especially in the teaching of cataloging and bibliography, while the earlier courses in book selection were tending toward courses in "book knowledge" organized around the major fields of the sciences, the social sciences, and the humanities. But Leigh's presentation, like that of Williamson before him, is largely restricted to a detailed presentation of the existing state of library education to which was added some subjective opinions respecting trends. Leigh gave no indication of any need for research into education for librarianship, much less any suggestion of the problems that might need investigating.

One curricular experiment at the University of Chicago should be reported for the light it throws upon attempts to alter basically the instructional program. By 1946, there had been considerable speculation about the four so-called "core" courses required of all first-year students--book selection, reference materials, cataloging and classification, and library administration. Ralph A. Beals, then dean of the school, and the present writer began to consider the possibility of bringing the first three elements of this four-course sequence into a coherent, unified, and coordinated whole. Fundamental to this new approach to the curriculum was the belief that in every situation involving books and people the librarian must bring to bear a body of knowledge, a point of view, and a set of skills which, taken together, are his peculiar professional possession, and encompass the tools with which he must work regardless of the level and the clientele with whom he must operate. Such a program, then, must center about the substantive content of library materials and the critical estimate of their intrinsic worth, but it must also familiarize the student with the totality of equipment, both physical and intellectual, that the librarian needs to expedite this relationship between recorded knowledge and those who use, or should use, it. Accordingly, in 1948 a sequence of courses was inaugurated which approached the "core" curriculum, not from the point of view of what the librarian does, as had been done by Charters, but from the substantive areas of knowledge grouped under the three categories of social sciences, the physical sciences, and the humanities. But by the time the program was ready for implementation, Beals had left Chicago to become director of the New York Public Library, and the real architect of the program was Margaret E. Egan, and subsequently, under the deanship of Bernard R. Berelson and with support from the Carnegie Corporation, a series of texts was prepared (Shera 1953, Asheim 1957, and Hoselitz 1960) for the fields of history, the humanities, and the social sciences. The text for the physical sciences was never completed. The program was never adopted outside of Chicago though it still persists there in an abbreviated form. Actually it has never had a really fair trial because those who believed in it most strongly, and who were mainly responsible for its planning left the Midwest before progress had reached a point at which results could be adequately evaluated. Moreover, the program for all its merits, and the present writer is convinced that it could have been richly rewarding, demanded great skill in coordination and in addition it virtually made mandatory that the student devote two years to the acquiring of his first professional degree.

In the meantime, acceptance of the conventional "core" to which were grafted traditional advanced and specialized courses, continued to receive support. In 1953, the Chicago school, under the deanship of Lester Asheim, sponsored a conference on the core curriculum, but it accomplished nothing except to bring together a substantial amount of untested opinion (Asheim 1954).

In an attempt to streamline the core, Case Western Reserve University inaugurated in 1966, its so-called "Foundations Course" (Focke 1968). This intensive course, which is divided into five areas, or groups--People and Communication; Materials; Tools; Institutionalization; and Services--has as its objectives to provide the entering student with a generalized overview of librarianship in a way that will make clear the inter-relationships and interdependencies of the various forms and specializations of the field, to present a theoretical structure of librarianship that will make these relationships clear, to provide some understanding of the historical development of the library in a way that will relate it to the communication process in society and the emergence of the library as a social instrumentality, to give a reasonable certainty that all students have a common background of understandings of the field prior to their entry upon a library specialty, to relieve the subsequent courses of much of their technical detail, terminology, and standard procedures that must be mastered by the recruit before he can progress very far in his quest for competence, and to provide those students who have not at the time of matriculation decided upon a specific area of library activity with some bases for making a rational choice in harmony with their competencies and interests. This course was an outgrowth of the general philosophy of library education set forth by Miss Focke, Margaret E. Egan, and the present writer at a conference held in Cleveland in 1955 (Egan 1956).

In 1962, the H. W. Wilson Foundation made a grant to the ALA for the development of a national plan for library education, and prior to the 1963 Midwinter meeting of the Association in Chicago an invitational meeting of those primarily concerned with the subject was held (Shera 1953). The undertaking, however, was a complete failure (Report 1967), and eventually was abandoned due, at least in part, to unrealistic planning and false goals (Shera 1964). The Foundation, however, undaunted by this initial failure, provided the ALA with funds for the establishment of an Office of Library Education at ALA headquarters, which is still too new to permit of evaluation.

During this same period a fair amount of experimentation was taking place in some of the schools. At Simmons College, Kenneth Shaffer and Thomas Galvin were investigating the utility of the case study methods in teaching such subjects as library administration and reference work (Shaffer 1959; 1960; 1961; 1963; Galvin 1965). At the University of Maryland, Paul Wasserman introduced a curriculum that strongly emphasized administration and management. Walter J. Stuart (1965) of the U. S. Office of Education, has made some progress in exploring the implications of the systems concept in teaching of information science. Also, Manfred Kochen (1965) has been experimenting with a course, offered at the University of Michigan, on information retrieval theory. Quite obviously, at certain strategic points, the new concepts of librarianship are beginning to have some influence. Doctoral programs, some of them well organized and developed, began to proliferate at an accelerated, even alarming, rate which was not always to the advantage of the field. Increasingly, too, library schools began to address themselves seriously to the need for a sixth year program that would provide advanced study but not be oriented toward research as the doctoral program was supposed to be.

Following remotely the trails blazed by Charters and Leigh, Anna Hall, (1968) of the Carnegie Library at Pittsburgh, analyzed data from 13 large public libraries and 12 library schools to determine the relation, if any, between the knowledge and skills needed to perform professional activities and the extent to which library school curricula fulfill those needs. Thus she was able to formulate a taxonomy of educational objectives against which curricular content could be aligned. She found that practicing librarians placed high priority upon the mastery of complex skills and abilities as well as acquaintance with subject matter, related to, but not necessarily unique to, librarianship. She concluded that most of the necessary factual information was adequately taught, but that the higher intellectual abilities and skills above this factual competence were neglected. In short, she was really proving the thesis espoused by Williamson almost a half-century earlier. By contrast to Miss Hall's findings, six recent library school graduates on the staff of the Enoch Pratt Free Library complained that library schools generally devoted an excessive amount of attention to the theoretical to the neglect of the practical (What's wrong. 1966).

The Doctoral and Other Advanced Programs

Ever since 1861, when Yale University awarded the first Ph.D. in the United States, the degree has been regarded as symbolizing competence and achievement in research. It is therefore not surprising that, librarianship having been long regarded as a service occupation, for virtually a quarter of a century the Graduate Library School of the University of Chicago stood as the only example of its kind in the library world. It was the academic librarians, quite naturally because of the high prestige value of the doctorate in the halls of academe, that first felt the need for such an advanced degree. Indeed, Munn (1936) spoke for most public librarians when he wrote of the educational requirements for professional positions at the Carnegie Library at Pittsburgh, "I believe that the Pittsburgh staff does not need more bibliographical and technical training than is now given in one-year library schools."

J. Periam Danton (1959), who was himself among the first to complete the pioneer doctoral program at the Graduate Library School of the University of Chicago, summarized the objectives of doctoral study as "(1) To furnish mature librarians, having scholarly ability and interests, with opportunity for advanced study and research in the library field; (2) To develop in the student (a) subject mastery and (b) competence in research and investigation; (3) To organize, conduct, and publish studies which will extend the bounds of knowledge in fields pertinent to the theory and practice of librarianship; and through these means, (4) To provide for the profession qualified researchers and personnel for teaching and higher administrative positions." Danton quite properly pointed out that the objectives of the doctorate in library science were virtually identical with those of advanced graduate study in the subject disciplines, especially among the professional fields. The only difference being that in librarianship the emphasis tended to be, in part at least, more oriented toward the practical than is true for programs in the purely "academic" disciplines. His study, though its statistics are now seriously out of date, still stands as something of a landmark for its analysis of the programs, subjects of dissertations, qualifications of faculty and students, factors which were preventing the schools from attaining fully their objectives, and the contribution which the doctorate has made to the profession. There exists a real need to bring his careful investigation up-to-date, a need that is not met by Davis' tabulation (1968) of master's and doctoral theses from 1950 to 1967, or Walker's (1963) analysis of thesis content for the years 1949-1958.

The introduction of doctoral programs into library school curricula should, and in many cases did, make possible the enrichment of the student's educational experience through coordination with graduate courses in the parent university. In a number of instances the doctoral programs are truly interdisciplinary and require that the student be examined in a subject field as well as in librarianship. But as Neal Harlow (1968) warns, some of these coordinate subjects can be intellectually and psychologically more rewarding than others, and therefore the real purpose, for the librarian, in acquiring the degree should be kept constantly before the student and his advisor. Harlow's warning would seem to be rather obvious, but on the other hand both Harrison (1968) and Osborn (1967) have seriously questioned the academic standards and the value of the results of many of the doctoral programs, and whether or not they really achieve their objectives. The question of who needs the doctorate in librarianship and what is done with it, in terms of its worth to the recipient, are areas in which serious and objective study is needed. Not only in education for librarianship, but also throughout all higher education generally, there is a serious need for a comprehensive study of the deterioration of degree structure especially as it relates to a kind of "academic Gresham's law" in which cheap degrees drive out those which have true substance.

The very obvious lack of need of most librarians for the doctorate combined with an awareness that formal professional education beyond the master's degree is, or should be, of substantial importance to most librarians has given rise to a growing belief that an advanced, but non-research oriented program would be desirable. Ray Swank (1965) saw four important roles for such an intermediate curriculum: a sixth-year specialized curriculum; an internship; an opportunity for continuing education; and an alternative curriculum in information science. So-called "post-masters programs" now exist in a number of the schools accredited by the ALA. Floyd N. Fryden (1969) a graduate student at the University of Chicago, has surveyed these offerings at eleven schools. Three objectives were identified: (1) to prepare teachers in eight undergraduate or graduate library school curricula; (2) to prepare practicing librarians to advance into administrative or specialized positions, and (3) to provide additional knowledge and training that would permit practicing librarians to improve their performance in their existing positions. In most of the schools the degree is terminal, though in three it was the first step toward the doctorate. Requirements, curricula, and relation to substantive courses in other parts of the university varied widely, though perhaps the most interesting and significant fact is their heavy dependence for financial support upon Title IIb of the Federal *Higher Education Act* of 1965. Only three of the programs were formally started prior to the autumn of 1966, and only two have received no aid from the act. In one of these two instances, however, substantial assistance was received from state aid. In the remaining eight schools there was a close correlation between the number of fellowships received and students enrolled. Thus the question inevitably arises of the relation between available money and real need in promoting these educational ventures. Quite obviously the present method of support takes basic decisions concerning the character and effectiveness of these programs out of the hands of the schools themselves and places them under the control of an extra-mural agency. More information is needed, too, about the experience of other professional groups in providing education beyond the first degree. The work that Fryden has begun should be carried forward in greater intensity and depth than was possible for him.

Two additional studies of library education, neither of which is as yet completed, should be mentioned. The first is that section of the University of Maryland *Manpower Study*, which deals with library education and is under the direction of Rodney White of Cornell University. This investigation makes use of a battery of questionnaires, sent to both students and faculty of library schools, and protracted visits to the schools themselves in a concerted effort to determine the present state of library education and the reaction of students and faculty to it. White's background, it should be pointed out, is in business management and administration, and his two major investigators are graduate students in Cornell's program of hospital management.

The second study, which is also nearing completion, and which has been financed by the Carnegie Corporation of New York, is a highly subjective inquiry into the sociological foundations of library education, and is being prepared by the present writer. In making the grant the Corporation specified that it was to be "a distillation of" the author's own "thinking about library education." Also the Office of Library Education of the ALA, together with its committee of advisors, has been considering the possibility of "another Williamson report," to be prepared by a social scientist, though it would seem that any such undertaking should wait for the results of the two investigations mentioned above.

RESEARCH NEEDS OF EDUCATION FOR LIBRARIANSHIP

"The big question about graduate education," wrote Bernard Berelson (1960) in his study of the subject for the Carnegie Corporation, "is the one on which it is most difficult to get solid evidence: how good is it? The ultimate answer to that question must be found in one of two directions. . . . One is an inquiry into the content of the programs. . . . The other is an objective investigation into the quality of the product; that is an extremely large and complicated matter in itself. Either of these, or both together, would give a more nearly final answer to the persistent question of quality." Thus Berelson settles for an inquiry into "how good people think" graduate education is, and we go back to the questionnaire with all its faults and its paucity of virtues.

Oliver Carmichael's (1961) somewhat strident critique of graduate education gives no hint that its author believes that the objectives and curricula of the modern graduate school, though it seriously needs reform, is a proper subject to be "researched." Similarly Jenckss and Riesman (1968) give, in their monumental inquiry into the academic revolution, no hint that the salvation of higher education, or even its efficiency, is to be sought in any intensive research program that will lay bare faults and evaluate reform.

With respect to library education itself, Conrad Rawski (1969) touched the root of the problem when he wrote respecting the amount of subject knowledge required by the practicing librarian: "Now, what kind of subject knowledge is appropriate to a professional librarian? The answer to the question depends on a host of variables among which our own assumptions may be the most distinct and the most ignored. I do not think that we could reach a consensus on what should be taught. But, instead of prolonged debate in experiential terms, we might view the question of appropriateness as a problem situation and attempt to inquire into--what might be taught under certain stated conditions. It is the uncertainty of these conditions, or, rather our failure to recognize and address ourselves to this uncertainty, which has beclouded the program of subject literature since the days of curricular debate at Chicago's Graduate Library School."

Yet, despite the evidence that educators generally have been distrustful of research directed toward the improvement of the house of intellect, librarians persist in babbling about the need for research into library education as a guide to change. Thus Schick (1963) and Reagan (1962) have posed such topics for research as: a study to determine the feasibility of a coordinated research program for the accredited library schools; a study to determine the optimum number of library schools for the nation; a study to determine the quality of administrative performance in the management of library schools; a survey of the needs of library schools for larger faculties, better quarters, research funds, and other facilities. Other topics which have been suggested at one time or another include: a study of the optimal amount of curricular flexibility; the recommended or elective courses that should be included in the master's program; the identification of courses outside the library school customarily taken by the student and their importance or relevance to the program of study; the sources of dissatisfaction with the current conventional curricula; the relation of laboratory and field work to the library school program.

One has but to list such topics to see the naive conception of research which they imply, and even were they carried out, the very limited value they would have in contributing to the enrichment of the student's educational experience. "I do want to point out," Abraham Kaplan (1964) told a University of Chicago conference on the intellectual foundations of library education, "that the term 'research,' which is certainly one of the 'O.K. words' of our time, is very widely used to mean nothing other than literally a re-search--that is to say, not an extension of the domain of knowledge but the making available to particular people some things that were already known but not specifically known to them at that time." Subsequently he went on to say, "I find often operative--very widely, for instance, in the conduct of the behavioral sciences--a very human and very understandable tendency (but no less objectionable for being understood) to do the things that we already know how to do. We tend to formulate our problems in such a way as to make it seem that the solutions to those problems demand precisely what we already happen to have at hand. With respect to the conduct of inquiry and especially in behavioral science, I label this effect 'the law of the instrument.'" Certainly one would be hard pressed to find an area that better exemplifies Kaplan's law than the so-called research in education for librarianship.

The apparent lack of success in devising a research program directed toward the solution of problems in library education is to be found in the essential incompatibility of the research process and the nature of education as a human phenomenon. Research, as the present writer (Shera 1964) told the Allerton Park conference on research in librarianship, is an intellectual act that begins with an awareness of one's ignorance and progresses through the critical examination of evidence that is both reliable and relevant to the revelation of truth that is generalizable and universal. In the final analysis it is a search for an explanation of phenomena and it is not primarily a guide to action, though the guidance of action may be a consequence of its findings. But the real problem in applying research to the educational process, and especially to the process of educating librarians is that we are groping in the dark for hard "facts," and we do not know what the "hard" facts are. Basically we do not know what learning and librarianship are or how either influences conduct or behavior. At the present time we know learning only at the most elementary behavioristic level and such knowledge is of little help in understanding the intellectual processes involved in higher education. We may watch the behavior patterns of mice in a maze, and from them make the leap from mouse to man but the extrapolation is not necessarily valid. Because of the empirical character of much of educational research, and its excessive dependence upon local observation and limited and incomplete data, more frequently than not it is parochial and provincial rather than general in its applicability; and always it is in jeopardy from emotional coloration. The educator means to do good, and by dint of hard work and self-sacrifice he does what he means to do, and therefore what he does is good, right and proper. But the true scholar will not always accept the educator's premises and the fine educational model comes fluttering down like the house of cards that it all too often is. As for librarianship, there is no structure, no frame of reference, no real agreement about what librarianship is and what the librarian's professional responsibilities are against which the librarian's educational program can be measured. Certainly it is not our intention to discredit valid and relevant knowledge about either higher education or librarianship, but it must be valid and relevant.

THE UNCHARTED ROAD

"*Wohin der Weg?*" was the cosmic outcry of a Faust who had wearied of metaphysical research, and Mephistopheles' response has much symbolic meaning for research in higher education today--"*Kein Weg! Ins Unbetretene.*" The way of research is, indeed, uncharted. David Riesman (1969) has stated the problem somewhat more explicitly: "Educational reform depends on the local landscape, the local resources that student and faculty presently bring with them; indeed, change must be incremental and must build on what is already available." "In scientific work," wrote Marion J. Levy, (1966) "it is more important to be fruitful for further work than to be right." We must stop trying to deceive ourselves that in the mystique of research must be sought the key to the solution of all the problems of library education, and the cure for all our ills. We would not discredit research, but it is important to remember that much of the research that is vital to the improvement of library education will come from *without* rather than from *within* the library profession. The library educator would do well, therefore, to study seriously such important contributions to educational theory as Ralph Tyler's *Basic Principles of Curriculum and Instruction* (1950); Hilda Taba's *Curriculum Development: Theory and Practice* (1962); the two volumes on the *Taxonomy of Educational Objectives* (1965); Virgil Herrick's *Strategies of Curriculum Development* (1965); the two volumes on learning theory by Mowrer (1960); *A Study of Thinking* by Gerome Bruner and associates (Bruner 1956) and those two delightful little books by Bruner alone, *The Process of Education* (1960), and *Toward a Theory of Instruction* (1966).

But the library educator can also derive much benefit from the thoughtful and frequent rereading of a literature that, in general, does not fit the stereotype of research *qua* research--the philosophical and autobiographical writings of the great "names" in the field of scholarship, names such as Cardinal Newman, John Dewey, Charles W. Eliot, Alfred North Whitehead, Robert M. Hutchins, Ortega y Gasset, Henry M. Wriston, Clark Kerr, and a host of others like those listed in the present writer's "Twelve Apostles" (Shera 1969). Experience is the source of all wisdom, and such writers are rich in experience and can speak with authority.

What then does library education need to refine its goals and make its curriculum more relevant to the needs of today and tomorrow? First of all there must be maintained an effective dialogue between library educators and those engaged in scholarly work in other and related academic disciplines, for only through enrichment from without can library education avoid sophistry and the stifling vortex of that centripetal force which is parochialism. Any procedure that contributes to the interdisciplinarity of librarianship is to be welcomed. Riesman (1969) speaks with enthusiasm of the program at Sarah Lawrence College, "where there are virtually no curricular requirements, but where the adviser or don carefully counsels a student in imaginative ways, opening new possibilities, suggesting paths through the available courses . . . where she can be persuaded although not compelled to abandon self-protectiveness in exploring the curriculum." Again he points to the work at the State University of New York at Buffalo where President Martin Meyerson has begun tentatively "to link each graduate professional school to the relevant area in the arts and science faculties" and at the new college in Old Westbury, New York, which is attempting to build undergraduate programs in medicine, law, and perhaps theology into the curriculum. Such programs would perhaps give new direction and vitality, not only to the library school but also to the liberal arts program and save it, if properly designed and controlled, from a premature vocationalism.

Quite obviously library education can never achieve its goals or provide a sound program of study unless it brings to it a faculty composed of the best minds in the profession, people who are dedicated to the art of teaching, equipped with sound scholarship, and skilled in communication. To such a faculty must be attracted highly motivated and intelligent students for without them no educational program however well designed and "researched" can be a success. And this faculty and these students must be brought together in an atmosphere hospitable to exploration. "One thing above all else must remain strong on our campuses," wrote Tishler (1969) in a recent issue of Science, "if the universities are to serve society beneficially. This is the freedom to speak one's mind and the freedom to participate in responsible dissent. This is the basis of the long, hard battle for tenure fought by university professors which allows them to behave as scholars and critics without fear for their jobs." Freedom to experiment and the resources with which to do it, the right to challenge and to disagree, the bringing together in a fruitful and understanding relationship the best library school faculties and scholars in other disciplines, these are the great needs of library education today--then can we say with Stephan Machlup (1967) "Let's give up striving for complete coverage of some body of knowledge. Let's give up the aim of a structured curriculum through which all students are to attain that minimum without which . . . (end of sentence ad lib). Let's give up trying to tell our colleagues what their courses should contain. Let's give up trying to avoid overlap and duplication. Let's instead provide the students with an enormous choice of educational materials--yes, lectures, of course, and libraries, but also games and toys (you don't have to call it research), films, tea and beer parties, trips, long-distance telephone conversations, and other electronic aids to data retrieval. All of these can be tightly or loosely 'programmed,' linear or branched. And let's make sure there's a constant lively dialogue, with the faculty doing its share of the listening, not just about our subject, but also about how successfully it is getting across." When library education has achieved Machlup's goal it will, indeed, have attained maturity and won't need to apologize to anyone in the ivy-covered walls of academe.

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CHAPTER III

RESEARCH NEEDS RELATING TO GENERAL VS. SPECIALIZED LIBRARY EDUCATION

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ABSTRACT

The problem resolves itself to one of the nature of specialized library education needed and the points in the structure of professional education at which specialization should be introduced. Accepting the importance of specialization in the field of practice, the plan for adequate preparation for such specialization--whether in formal education, continuing education, or in-service training--has yet to be evolved. As such a focus is developed for library education, the need to clarify the substance and contributions of general library education is great. The "core" of librarianship must be reexamined in the light of the elaboration of the profession in the last generation, and the "core courses" reconstructed in the light of the fresh conceptualization.

Research can contribute to the development of solutions to the problem through clarification of concepts of "core" and "specialty"; through measurement of the relative effectiveness of programs of general vs. specialized educational focus at different levels of education and for a variety of learning goals; through relating the field of practice to the program of education.

Because there are relatively few formal research studies in this area of library education, suggestions of research approaches, with illustrative proposals, are appended.

PROBLEM DEFINITION

> "When knowledge was comparatively limited in scope, all students could pursue essentially the same curriculum."(1)

> "Specialization makes manageable the human effort to advance man's knowledge. . . . (There) is the intellectual obligation to make a serious effort first to see the relationships of all our specialties to each other and second, to see the relevance of both our specialties and their interrelationships to (the whole)."(2)

Any inquiry into the question of general versus specialized library education will be more profitable if it is removed from the context of alternatives and is rephrased as a question of the roles of general and specialized education in preparation for librarianship. It is clear that the concept of "core courses" is rooted in "general" library education, and that sequences of courses designed to prepare librarians for expertise in narrow fields fall into the area of "specialized" education. There are, however, a variety of other approaches to specialization, and the realities of the situation force the question not to be one of _whether_ but rather one of _how_ and _when_.

As the practice of librarianship becomes increasingly elaborate and the work of librarians increasingly differentiated, specializations are a most obvious feature of the professional landscape. Professional commitment to the generalizable body of knowledge that applies to all librarianship is being reexamined in the light of three pressures: (1) to make efficient and economical the course of professional education; (2) to allow the specialty to shape the pattern of professional education for those who will work in that specialty; and (3) to enable persons of a wide variety of special competencies to enter professional study.

The pressures toward a totally specialized education, however, are being resisted at this juncture by two major considerations: (1) the loss to librarianship of an identity across and above specialties and (2) wasteful duplication of teaching basic principles in each of their many contexts (Jackson and Rothstein, 1962; White, 1948). The fields of information science and school librarianship present the greatest challenge to "general" library education. Single-purpose programs to prepare for these two fields are well established in some institutions. At other universities, special curricula in the two fields are separately identified within the more general library education programs. Unique requirements for admission, or graduation, or certification are often made in these two fields.

To guide the evolution of library education both in its broad structure and its curriculum development, there must be study of the question of the roles of general and specialized library education.

HISTORICAL REVIEW

In a paper presented at a 1965 institute for library school administrators, Raynard C. Swank, Dean of the School of Librarianship at the University of California (Berkeley), indicated that a number of changes in library practice held important implications for the education of librarians (Swank, 1965). One of the four trends identified by Swank was "the emergence of additional, exacting specialization in librarianship, especially in the area of information science, including operations research, systems analysis, and mechanization." The importance of this one factor was underscored by the fact that the major part of his remarks dealt with the problem of the place and content of specialized education in the library school curriculum.

Swank proposed that library schools had a number of choices they could make concerning this problem, including the decision to minimize the core curriculum in order to allow more time for specialization, or the preservation of the core at the expense of special education. A third alternative, which Swank acknowledged was being tried at a number of schools, was the development of a post-master's (non-doctorate) program for specialists. Under this program, individuals would undertake academic preparation for their specialty after completion of the master's degree. A number of recent reports and studies support the development of specialist programs while acknowledging their areas of initial weakness (Danton, 1969; Fryden, 1969; Lowrie, 1964; Vainstein, 1968).

The fourth alternative, as developed at California, is a fifth-year program in a designated specialty that parallels the more traditional library science curriculum. Other possible solutions to the problem of specialization are on the-job-training and, as Shera suggested, letting "the specialists be trained in other schools with the essentials of librarianship added to their program in capsule form" (Shera, 1964).

Concern about specialized education has been evident almost from the beginning of formal library education. Ernest J. Reece (1936), in his excellent analysis of the evolution of the library school curriculum, traces the early introduction of "specialized" courses in various library schools. He notes, however, that in some cases this introduction resulted in the building of the basic curriculum "not in anticipation of library work as a whole, as has been the design generally, but with reference to service in a specific kind of library."

Prior to Reece's study, Charles C. Williamson (1932) had pronounced that specialization appeared to be desirable since it produced "a reasonable degree of efficiency in library service." He went on to note, however, that:

> The opinion is very widely held . . . that while the first year of study should be general and basic, the second year should be definitely and even minutely specialized in the field in which the student is to take up his work.

In addition, Williamson envisioned that this specialization would take place after the first general course had been completed and a year of experience in a library had been gained. The areas of special study which Williamson acknowledged were (1) school librarianship; (2) special reference and research work in academic libraries; (3) work with children; (4) cataloging and classification; (5) administration; and (6) work in business libraries.

Numerous meetings and institutes have been held to discuss the problems of education for librarianship, with typical inclusion of the subject of specialization. An extensive body of literature has been devoted to librarians' calls for more precise specialization in the curriculum to prepare for the variety of specializations developed in library practice. Some librarians, however, feel that certain specialties can be learned on the job. Ralph Munn (1949), for example, expressed his belief that for some activities "an aptitude, an interest, and a willingness to sit up nights with some of the library's own books are the only real requirement." A review of much of this literature reveals a number of trends.

First, the number of specialties which library schools cover seems to grow daily and has increased to include almost every conceivable activity, type of library, subject area, or type of clientele served. To Williamson's rather modest list have been added such areas as medical, law and science librarianship; county, regional and systems library administration; subject and "area" bibliography; media and audiovisual services; public relations and personnel management; information service and information science. Typically the library school curriculum has expanded by the addition of one or more courses as electives in each area of specialty, crowding the traditional library school program to obscure the core course areas (Winger, 1965; Leigh, 1954; L. Cohen and Craven, 1960).

A second trend is the relatively common acknowledgement that a basic core exists but that specialization is an extension beyond this core. The discussion, then, is not a matter of general versus specialization but rather a concern for identifying the point at which specialization should take place. Such concern has led to frequent criticism of the curriculum in the preparation of special (Jackson, 1967), school (Darling, 1967) and academic librarians (Muller, 1967). Others have expressed interest in assuring the proper balance between "core" and specialization in the educational preparation of adult education specialists (Asheim, 1955; Monroe, 1959), young adult librarians (Hatch, 1968), law librarians (M. Cohen, 1962) and various aspects of health science librarianship (Lieberman, 1968).

As the stress on the unique content of the specialization grows under the pressure of demand from the practitioners, library education has begun to develop specialized programs to replace the general program of library education. School librarianship (Henne, 1964; Janke, 1964) and information science programs (Heilprin, 1965; International Conference on Education for Scientific Information Work, 1967; Taylor, 1964, 1967) have been developed as independent programs, paralleling the traditional library science track but focussed on the single specialization. The establishment of such independent programs, however, does not solve the problem of content or balance between core and specialization.

Opinions and experiences of various librarians and educators, rather than research, have formed the basis for much of the discussion of specialization in the curriculum. Lowell A. Martin (1957) and Reece (1965) have prepared comprehensive surveys of the research done in education for librarianship. A review of both papers, as well as of the work completed since Reece's report, indicates that few empirical studies have been undertaken which explicitly address themselves to the problem of general and specialized education and its relationship to professional proficiency. The studies that are pertinent to the question under consideration have been grouped, for convenience, into five general categories which represent different research approaches.

The first group consists of the omnibus-type survey of the general condition of library education. The most noteworthy are those by Williamson (1923), Reece (1936) and Leigh (1952). These three reports have had a direct impact on the structure and content of library school programs and further research of this type should incorporate study of general and specialized education. A second group of research efforts consists of the studies undertaken to develop library school curricula on the basis of job analysis. Among this group are the works of W. W. Charters (1927), Reece (1949), and Dorothy E. Ryan (1950). A recent effort by James Liesener (1967) to validate the core concept using job analysis is of particular interest and is discussed more fully in the next section. A third, although somewhat smaller, group of studies have taken as their focus the evaluation of job performance by library school graduates in comparison with individuals lacking such preparation. Although not directly aimed at the central problem of this paper the studies by John A. McCrossan (1967) and Charles A. Bunge (1967) represent this type of evaluative approach and also offer some general evidence of the validity of a part of the core in professional education. The study of personnel in public library inner-city service by Margaret E. Monroe (1970) examines the patterns of job performance in relation to patterns of professional education.

The fourth group of studies is aimed at determining the attitude of librarians towards their professional preparation in terms of their job requirements. The studies by Isabel Nichol (1942) and Edward A. Wight (1945) were limited to graduates of two specific schools and were intended to be used in the evaluation of their curricula. The survey by Marie A. Long (1965), on the other hand, covers a specific type of librarian (the state library consultant) and contains data which reflect on the adequacy of a number of library school programs. The conclusions of this study, as they pertain to the educational preparation of librarians, is also included in the section following.

The study by Anna C. Hall (1968), also discussed below, is the single representative of a fifth category. This study analyzes the substantive knowledge needed to perform specific public services through content analysis of reports of service experts as observers. This research technique has been found to be useful in other disciplines and has been applied here for the first time to librarianship.

Three Recent Studies. Marie Long's The State Library Consultant at Work represents one attempt to explore the work of a special type of librarian. The survey describes the state library consultant in terms of educational preparation, duties and attitudes. The report also includes a list of subject fields that the consultants found to be helpful in their work and a second list of courses which they felt would be useful and would increase their effectiveness. Although elements of library science were ranked high on each list, it was also evident that administration, social studies, and communications skills were considered important. Mrs. Long's conclusion is, in many ways, an indictment of the education preparation of this one group, and suggests the need for a second professional year of specialized study once the professional specialization has been chosen:

> Since they considered consulting late, often some time after completing their formal education, consultants generally lack special preparation for consulting work. Indeed, there is some reason to believe that their formal education was in many ways inappropriate for the special work they later chose; while courses in the social sciences were most often mentioned by consultants as helpful in their work, most of them majored in the humanities. Neither had consultants had any special training in consulting methods.

A second study of particular interest is James Liesener's An Empirical Test of the Validity of the Core Concept in Preparation of University Librarians. In this study, Liesener (1967) compares the specific subject matter which was recommended as the essential core at the 1953 Chicago Conference (Asheim, 1954) and the subject matter relative to the job descriptions made for one academic library. Although some of the core concepts were found to be valid, this study raises some serious reservations about much of the core. Liesener also finds the method of job description somewhat wanting as a means of determining the "knowledge base" of various professional university library positions.

> Certain problems regarding the use of job analysis as a method for verifying the need for knowledge of the core were revealed during the process of the investigation. A thorough job analysis can reveal the tasks performed in very detailed fashion but frequently a great deal of subjective judgment is required to determine precisely the knowledge specifications needed to perform the tasks. The need for a more objective and precise method for determining job

> specifications for librarians was felt very keenly in this investigation and strongly suggests itself as a worthy area for further research.

This reservation is reminiscent of the concern expressed by Leon Carnovsky (1960) seven years earlier:

> The trouble with the activity analysis approach is that it may be regarded in a much too literal and superficial way. Many activities, altogether indispensable in the smooth functioning of libraries, are readily--indeed better--learned on the job. If routines, charging systems, and superficial administrative procedures are codified at all, they belong properly in a library's staff manual and not in the curriculum of a library school in a university. This is not to condemn activity analysis as a basis for curriculum construction; it is merely to imply that activities should be truly analyzed, not merely described; and in such analysis the elements that call for judgment and background should be identified and incorporated in the curriculum.

While neither goal has been achieved--job description based on knowledge needs or curriculum construction based on knowledge required--one effort to determine the appropriateness of present library school education to professional activities has been reported by Hall (1968). The specific objectives of the study were to determine what knowledge was necessary to perform a few select public service activities, to structure this knowledge into a taxonomy of educational objectives and to measure the degree to which library education accomplished these needs. While the research does not cover every aspect of librarianship (as the author acknowledged), the method, conclusions and recommendations deserve consideration from anyone attempting further research in this area. By design, Mrs. Hall's research was limited to education in library schools but the analysis of job performance indicated knowledge acquired from other disciplines. Her final conclusions are critical of both graduate library education and of the unstructured nature of the undergraduate programs.

SUMMARY AND EVALUATION OF THE HISTORICAL REVIEW

This brief review of the interest in reaching a desirable balance between the general (core) and specialized components of the librarian's professional education has revealed a number of trends and shortcomings. In the early history of library education, concern over the adequacy of the program was followed up with a number of landmark studies. Efforts were made to relate the content of the curriculum to practice, although the methods used may not have been sophisticated. In the period following World War II there was a greater concern with formalizing the level at which the specialized program was undertaken, while less attention was paid to the content. Conference proceedings and written reports outweighed in volume the much smaller amount of empirical evidence that was secured. The few formal studies that were done tended to indicate weaknesses in achieving expertness in either the general or specialized areas of education.

Part of the problem may have been that once certain specialties were identified--usually by type of library or type of clientele--the needed development and elaboration of curriculum was slighted. Further levels or degrees of specialization within these categories were not delineated. No study seems to have been undertaken, for example, that would compare the type of knowledge necessary to perform reference functions in large academic libraries in contrast to large public libraries. The ambitious research program of school and children's librarians described by Ruth Ersted (1949), on the other hand, envisioned a whole series of questions which were to be studied. While much of the program was not completed as such, three correlated topics served as the basis for master's theses at the University of Chicago in the early 1950's (Butler, 1953; Ersted, 1951; Fenwick, 1951). Development in the 1960's of specialist programs as advanced levels of professional study seem currently to provide a potential solution to the problem.

Also evident from a review of the literature is the growing realization that curriculum construction must be based on an understanding of the knowledge required for professional proficiency and cannot be limited to an evaluation of technical skills alone. This calls for the development of new approaches for evaluating professional activities; simple job descriptions will not suffice.

Another problem area is the ever-present question about the desirable undergraduate subject specialization in preparation for librarianship. Traditionally, it has been assumed that a liberal arts education is required. Although this may be true, the variety of disciplines within the "liberal arts" is so great that the term has lost most of its meaning. There is an evident trend towards emphasis on mathematics, the natural sciences and the social sciences but analysis of the appropriateness of this emphasis has never been made.

TENTATIVE SOLUTIONS AND AREAS FOR RESEARCH

Need for Definition of Terms.

Discussing the problem in the context of the mission of particular library education program, "general library education" is represented by the multi-purpose programs and "specialized library education" by the single-purpose programs. Within the graduate multi-purpose program schools, the master's program typically represents "general library education" while advanced study programs (specialist and/or doctoral) represent "specialized library education." In the context of the typical master's program, assumptions have been made that the "core courses" represent general library education, and that electives supply the "specialization" (Asheim, 1954). A fourth context for definition may lie in the course programs of individual students and in the "general" versus "specialized" impact of their course sequences. The question may be whether "the specialist" is the product of "specialized" library education. Differentiations among these meanings of "specialized education" will hasten communication and problem solution.

Further definition is needed of "specialties," the areas around which library education might structure specialized programs. How stable are the specializations in the field of practice? To what extent do they guide library education? Does a specialty consist of the special contexts of use and special groups of users, of the special subject matters and collections, or of the unique library functions, operations and techniques? Are there specializations at the advanced level of "core" areas, such as reference or cataloging? Does specialization represent unique function or a level of excellence in practice? Clarification of these concepts will open up a variety of aspects of the problem which can then be dealt with more manageably.

The Structure of Specialized Library Education vis a vis General Library Education.

Specializations of different aspects of librarianship have developed different educational patterns; whether these are due to historical accident or to innate necessity needs exploration. "General" library education, beyond the concept of "core courses," needs description and analysis. The extent to which typical programs of both "general" and "specialized" approaches avail themselves of the emphases, courses or materials of the alternate approach should be analyzed. Greater concreteness will strengthen the basis for choice of educational approach.

Undergraduate library education has been examined in the past primarily in terms of its economic necessity for society and for the student. Because school librarianship is the prime focus of this level of professional education, the undergraduate program in this field should be compared with master's (both general and specialized) and with specialist (intermediate degree level) programs for content and for competence of their graduates in school librarianship (American Library Association, 1958). The skills and techniques orientation of most early specialization seems outmoded for professional librarians who must be flexible in function and perspective in a rapidly changing society (Truman, 1964). Stabilization and articulation of the varied levels of preparation for school librarianship should result.

The rationale for single-purpose graduate library education programs has not been developed. Neither the accrediting agency nor developing programs have put single-purpose professional education to the test. Examination of a group of single-purpose graduate programs, whether in school librarianship or information science, should be undertaken for development of the needed rationale. The lack of standards for single-purpose programs is a serious limitation, and once a rationale is articulated, standards should be developed. Whether standards for single-purpose programs can be generalized to cover all types of programs should be explored. Consideration should be given to a pattern of specialized education at advance levels related to a multi-purpose Master's library education program.

The structure of specialization within the framework of "general" library education programs at the Master's level needs study. The wide range among schools in the proportions of required (presumably "core") courses and elective courses can only be guessed; how students avail themselves of electives (for smorgasbord or specialization) has never been analyzed, nor has the effectiveness of this self-selective approach to specialization been studied. Analysis here of the differences that may exist between curriculum structure and student experience of the curriculum may assist in planning.

The development of some relatively new Master's level programs with exclusive focus on "general" library education merits not only a fresh delineation of the rationale for such programs but also an evaluation of competence of their graduates on the job as compared with those functioning in similar positions from specialized library education programs.

The recent studies by Fryden (1969) and by Danton (1969) of Specialist (intermediate degree) programs, provide us with a broad picture of these programs that are designed specifically to build on traditional library education at the Master's level by an additional year of study that supports and strengthens the professional specialty of the student. The data from these two studies, while summarized to describe the range of policy and program, have not identified excellence and weakness nor particularized promising programs of various rationales and substance. Lowrie's study (1964, 1966) of a single purpose program suggests an area for comparative analysis. Such further study, in an evaluative context, is needed for development of standards and guidance to these new programs.

The case for development of specialization at the doctoral level is emerging against a traditional background of general library education at the doctoral level (Carnovsky, 1967; Swank, 1967). Perhaps at the doctoral level the rephrasing of the question from stark alternatives to matters of degree in emphasis is not relevant. The questions of specialization are intimately tied to questions of purpose of the doctoral program, and responses on specialization will vary with the program goals of research, teaching or professional practice. Elucidation of the choice of specialization or general programs in relation to these goals is essential.

Another element in the structure of specialized library education is the question of articulation of the levels of specialization. Is there a sequence of general-to-specialized education? Experience has shown the importance and the difficulty of moving students with undergraduate specialized education into general library education. Does early specialization assume an early conclusion of professional education? What is the role of continuing education? The profession has done no planning for sequence of education, and the question of specialization is an important concern in such planning.

Specializations grow out of the combinations of knowledge and talents of individuals, and specialized library education rests, in large part, on the backgrounds which its students bring to the study of librarianship. Study of the academic and professional fields related to particular areas of specialization are needed. The Allerton

Park Conference report on "Training Needs of Librarians Doing Adult Education Work" (Asheim, 1955) is illustrative of one approach to such elucidation in educational planning. A decade ago special librarianship posed the problem in terms of alternatives: subject background vs. library education, and concluded on the whole that both were needed. School librarianship is guided by state certification laws on this matter. Tighter analysis and evaluation of this question is necessary for career counseling and standards development. Consideration of the levels of subject background (e.g. medical science) or understanding of the user (e.g. physicians and hospital practice) required for specific specialties must be developed with attention to optimum sequence of study in library education and related fields.

The role of library education as the nexus for interdisciplinary study at Master's and advanced levels (in information science, in management and administration, in education services, etc.) needs exploration.

Library education's responsibility for preparing personnel with specialties rooted outside librarianship in business administration, public relations, reading, adult education, etc. needs exploration. These specialties, while needed by the library, have not been fully incorporated into library education. To what extent are their concepts, bodies of knowledge, techniques so incorporated? What is the desirable role of library education in regard to preparation in these specialties?

Curriculum and Methodology

A weakness in conceptualization of curriculum as a cluster of courses rather than as a program sequence is especially troublesome in the area of specialized education. Typically school librarianship has gone farthest in education of "sequence" and "program", with the new field of information science establishing comparable levels of precision. The factors that work against early specialization in the field of practice (need for personal mobility geographically, late maturing of professional interests, etc.) make strict requirements in course sequence a difficulty. The traditional concept that the able student with general library education (or the able student with any kind of "accreditable" library education) can teach himself the specialties as his need arises is now being challenged. Studies of optimum program sequence in particular areas of specialization are needed.

Specialized library education, far more than general library education, has traditionally a field work or internship component. Library education in the last generation has tended to drop this program element, but now is exploring its reinstitution. Analysis of the relative effectiveness of the practice experience at different levels of study and at varying levels of responsibility are needed for particular fields of specialized education. Examination of the practicum in related professional disciplines for the structure of the experience and for the elements of effectiveness is needed immediately.

Analysis of the elements of general library education in the "core courses" as proposed and as actually taught would help to measure the gap between the concept of general library education and its actuality. Exploration of the body of professional knowledge that is presented in terms of "general librarianship" will provide an assessment of the resources upon which such general library education can build. "General librarianship: myth or reality" must be concretely explored.

The relationship of general courses to specialized courses in the Master's program may usefully be elucidated. Case studies may begin to build a picture of current practice in articulation of these two aspects of the Master's program.

The Relation of General and Specialized Library Education to the Field of Practice.

The delineation of need for specialist education in library practice is a first step, which associations representing all types of libraries have engaged in for current manpower studies. The precise task descriptions that incorporate the new concepts, new technologies, and new service relationships remain to be developed. Once the positions of library clerk, library technical assistant and library assistant of the Asheim manpower structure have been realized, the revision of the specialties in librarianship (and their effect on library education) can become precise. It seems likely that all aspects of library service will have their professional functions. Both general and specialized library education must be restructured for education of what is generally referred to as "the new breed" of librarian.

If specialized library education be designed to meet the needs of the field of practice, evaluation must be made of the effectiveness of such programs in meeting these needs. The influence of factors of mobility, change in professional interests, and so on must be measured. Similarly the specialized work of graduates of general library education programs must be compared with that of graduates of specialized programs in meeting the needs of the practicing field.

Study of the sources of leadership in the professional specialties must evaluate the general and specialized library education programs from which the leaders come. The quality of leadership from the different programs might be analyzed for its relationship to specific elements in the program.

RESEARCH APPROACHES

Ideally, it would be desirable to distinguish the kinds of background knowledge that all librarians need (the basic educational preparation) and the types of knowledge required by the various specialists in order to perform library services and operations in an efficient and effective manner. As an example, a group of librarians representing a variety of specialties could be studied in order to determine what knowledge is needed in order to perform their work. The elements of knowledge common to all groups would represent the "core" or general educational needs and those types of knowledge unique to each specialty would identify the specialized education necessary.

This approach, however, presents three specific problems that must be considered. First, various personal characteristics must be controlled in order to determine the relationship between knowledge and performance. This could be accomplished by employing a number of tests which measure aptitude, intelligence, personality, etc. The second problem involves the establishment of a method to identify and categorize the components of the knowledge base. One method, the critical incident approach, has been employed by Hall (1968). Although job analysis has been found wanting, the limitation may have been in the level of analysis (frequently task description) rather than the technique itself. The question is not what the cataloger does but: in the performance of his work, what knowledge does the cataloger need? The same question can be asked of the science bibliographer or the children's librarian. Once this is known the question can be asked: how can this knowledge be provided most efficiently to the future librarian? Finally, it would be necessary to develop methods for obtaining objective measures of "professional proficiency." Surprisingly little research has been done in this area and further studies are imperative if library education is to be solidly based.

It seems evident that almost all professions, in the process of growth and development, reach a point where the question of balance between general and specialized education is debated. The literature of some of these professions should be reviewed in depth to determine the techniques and procedures followed and their applicability to the problems of librarianship. It is suggested that one specific area that might be studied is the work of the American Society for Engineering Education (ASEE). A number of studies by this organization have been identified by Armsby (1955). The major curriculum study in social work completed by Boehm (1959) for the Council on Social Work Education offers another source for comparative study. Education, medicine, theology, law, among many others, may prove rich resources for conceptualizing "specialization."

Research into the areas outlined here will often be dependent upon background in curriculum construction, learning psychology and a variety of research methods. Team efforts by librarians and other experts, therefore, is anticipated. Research strategies may be sought in the studies of related professions, not only hastening sound inquiry on tested approaches but also developing bases for comparisons with, and insights from, other fields.

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CHAPTER IV

RESEARCH NEEDS RELATING TO THE INTEGRATION OF INFORMATION SCIENCE AND LIBRARY AUTOMATION INTO THE LIBRARY SCHOOL EDUCATIONAL PROGRAM

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ABSTRACT

While there is agreement that library automation and information science should be integrated into the library school program at the master's level, most ALA accredited library schools now offer one or more separate courses on these topics. Before library automation and information science can be integrated into the library school program, a number of questions need to be answered. These include: what specific subjects should be taught? Should these subjects be taught on a theoretical and/or applied basis? Should these subjects be integrated within the existing or a revised curriculum? How should these subjects be taught and by whom? What educational background is required of the students? What aspects of these subjects should be pre-requisite for entering the program, taught on a non-credit basis, and taught for credit? What is the required length of the program? What teaching aids should be developed? The integration of indexing within the existing library school curriculum is discussed as an example of a specific research project.

PROBLEM DEFINITION

In reviewing the literature and in considering my topic, I have dealt primarily with the questions of what to teach and with what desired objectives, and in what context this teaching should be done and what should be the background of the teacher and the student. The context in which the teaching is to be done is the master's level library school curriculum, either as presently constituted or in revised form. This is the fifth-year program in the U. S. for librarians-to-be who seek employment as beginning librarians in academic, public, school, or special libraries. Library automation is defined as the use of data processing and other equipment in libraries. The following definition (American Society for Information Science, 1968) of information science is used in this report:

"As a discipline, Information Science investigates the properties and behavior of information, the forces that govern the transfer process, and the technology required to process information for optimum accessibility and use. Its interests include information representations in both natural and artificial systems; the use of codes for efficient message transmission, storage and recall; and the study of information processing devices and techniques such as computers and their programming systems.

"It is an interdisciplinary field derived from and related to mathematics, logic, linguistics, psychology, computer technology, operations research, librarianship, the graphic arts, communications, management, and similar fields.

"Information Science has both a pure science component, which inquires into the subject without regard to application, and an applied science component, which develops services and products."

It is not surprising that the other nine topics in this project are directly or indirectly related to my assigned topic. I have chosen either to ignore or not to treat in any detail topics that are likely to be covered extensively in the other project reports. For this reason little is said about general versus specialized education. I have chosen as my concern the fifth year program for generalists. For the same reasons, instructional methodology, library school faculty and students are not given much attention, though these are, of course, important aspects of my topic. What could not be disregarded and in fact loomed large in the background is the function of the librarian and the library school program at the master's level, both today and in the future, near and distant. My own opinions on these subjects are well summarized in the following quotations from a recent report by Lester Asheim (1968):

> ". . . the term 'librarian' (is used) to designate those who are qualified by background and training to go beyond the level of application of established rules and techniques to the analysis of library problems formulation of original and creative solutions for them." (p.1096).

> "The objectives (of the new masters' programs) should be to prepare people, not simply to keep libraries operating at their present levels, but to anticipate and engineer the changes and improvement required to move the profession forward." (p. 1102).

HISTORICAL RECORD

The literature on teaching library automation and information science was reviewed to answer the following questions, which also serve as subheadings in this part of the report:

* What to teach and with what desired effect?

* Where in the program should these topics be taught?

* How to teach these topics?

* Who should be taught and who should teach these topics?

What To Teach And With What Desired Effect?

Asheim (1968, p. 1104) makes the following comments on this subject:

> "The introduction of electronic computers and other mechanized equipment and devices does not alter basic aims of library service, however much they may affect the storage and retrieval of data, the reproduction of materials, the efficient performance of certain routines and procedures, and the possibility of new and expanded services. The new machines represent new tools which may (or in some cases may

not) prove useful in meeting those aims. Nevertheless, the potentialities of the machine and the new approaches to library and information service that they make possible represent an area of understanding essential to those who wish to perform effectively in the libraries of today or design the libraries of tomorrow. For that reason, a great deal of the traditional content of library school courses will have to be revised to accommodate changes that are already here or are soon to come".

Taylor, who developed an information science program outside of a library school, characterizes areas of interaction between librarianship and information science on one hand and engineering on the other, as being the areas of systems analysis, environmental context, information channels, the naming, labelling, and classification processes, and man-systems interaction. He believes that information science offers a much broader view of librarianship and foresees an entirely new library school curriculum with course groupings based on the five areas listed above rather than by types of libraries (Taylor, 1967). In 1964, Robert Hayes recorded his personal belief that information science will become an integral part of the librarian's profession and operational responsibility, and that it represents the theoretical, if not scientific, foundation of librarianship. He argues that the defining concern of information science is with understanding of the processes in handling and communicating recorded information. This, Hayes states, is best achieved by concentration on the development of methodologies for systems design, using the terms in the broadest sense. Methodologies listed by Hayes are user study, vocabulary development, technical detail of internal system processes, file organization, intellectual problems in judgment of relevance and screening of material, component and system evaluation, and organizational relationship, as for example between library and management. (Hayes, 1964). In 1967, Hayes described a course that includes some of these subjects and that is required at the University of California (Los Angeles) library school of all Master of Library Science graduates. The course according to Hayes is a relatively elementary introduction to the principles of systems analysis and data processing, with emphasis on those judgmental issues in evaluation with which the librarian should be concerned. The purpose of the course is to introduce the library school student to the technology of computing in such a way that he will see it in the total context of library purposes and goals. The emphasis of the course is therefore on the systems approach. Hayes comments that library school students generally lack the technical background for data processing work as such, yet, as library school graduates, they will find themselves in a world where that technology will play an increasingly important role. They must be given sufficient orientation to be able to fit data processing into the context of library goals and purposes. The intent of the introductory course on this subject is to bridge the gap between their existing background and their future work. (Hayes, 1967). The University of Toronto School of Library Science's position on this matter is stated by Kurmey. He writes that his school recognizes its responsibility to familiarize librarians with systems analysis and related disciplines utilized in library systems planning and to acquaint librarians with the powerful capabilities of the computer in libraries (Kurmey, 1966).

What do library schools teach in the way of library automation and information science? In a questionnaire survey of library school programs conducted by Schick, one question asked whether the school offers a separate course or courses on library automation and/or information science. Thirty-two out of 42 of the reporting ALA accredited library schools in the U. S. and Canada responded that they offered in the academic year 1966-67 separate courses dealing with these topics. Fifteen non-accredited library schools also offered such courses (Schick, 1968). This survey will be updated for the 1968-69 academic year, according to a recent announcement by the U. S. Office of Education (1969). Hayes (1967) lists course offerings in these areas by library schools as well as other schools under the following headings:

(1) Methods analysis for librarians including library systems analysis.

(2) Information retrieval with emphasis on mechanization and data processing in the library.

(3) Information systems analysis with emphasis on systems methodology to different information problems.

(4) Information science research emphasis.

Rees (1969) categorizes courses in library automation and information science into the following three areas:

Area I. Library automation (systems analysis, computer and allied hardware, theory and application of automation to library processes and procedures such as acquisition, serials, circulation control or catalog production).

Area II. Documentation and information storage and retrieval systems (design of retrieval systems, subject analysis, abstracting and indexing, structure of index language, file organization, question analysis, search strategy, dissemination, translation, testing and evaluation).

Area III. Information science research methodology (basic principles and tools of mathematics, logic, linguistics, statistics, psychology, and other disciplines and their application to the investigation of library-based and communication-related phenomena).

There are difficulties in conducting surveys of course offerings in library automation and information science, as is pointed out by Rees. He states that it is difficult to relate course titles with course content. This is caused by the lack of agreement as to the definition of documentation, information retrieval, information science, and library automation. Rees concludes that the major response of library education to the communication revolution has been to add courses in library automation and information retrieval. The educational emphasis has decidedly been upon the applied aspect of information science. A concerted effort has been and continues to be made in the provision of educational offerings designed to give students a knowledge of computers and allied hardware and their applications to library procedures. At the same time, an attempt is made to teach the structure of retrieval systems and their relevance to librarianship. (Rees, 1969).

Where In The Program Should These Topics Be Taught?

There seems to be agreement that library automation and information science should be integrated into the library school curriculum. Swank (1967) reflects this view but points out that the new, integrated program cannot be completed in one year of graduate study. His guess is that one would have to plan for two full years of graduate study. Hines (1967) suggest that the entire curriculum should be broadened so that almost every course is to include modern retrieval methods, science, and technology. This is also Asheim's opinion. He states that a great deal of the traditional content of the library school courses will have to be revised to accommodate changes that are already here or are soon to come. It is not enough for a library school to add a course in documentation or information science to its existing program. Asheim believes that the role of the new devices, the impact of new approaches upon traditional methods, and the implications for new services or better performance of current functions should be assimilated into the entire curriculum, enriching every course where it is pertinent (Asheim, 1968).

How To Teach These Topics?

Gull wrote in 1965 that during the preceding five years there had been considerable experimentation and changes in librarianship but the effect of these changes had not yet been widespread enough to produce a settled body of practice and knowledge which faculty could use as the foundation for its teaching. There were no textbooks suitable for courses in the field. There were almost no comprehensive articles or good reviews (Gull, 1965). Rees and Saracevic, writing in 1965, also point to the absence of texts as one of the problems of teaching in this field (Rees and Saracevic, 1965). There are a number of films that may be used as teaching aids (Slaven, 1968).

Demonstrations, exercises, and hands-on experience with information systems have been used or suggested by several writers. Western Reserve University's Comparative Systems Laboratory was used in connection with a course in information storage and retrieval systems. The students' response was very favorable, partlv because they were brought to the frontier of knowledge and partly because they were given the opportunity to participate in research (Saracevic, 1968). Batty (1967) suggests the use of a model of an indexing system to simulate real life experience. The model, which was not yet ready for use at the time of publication of the article, is to be employed for demonstrations to elementary and large classes and for manipulation by advanced classes. The LEEP (Library Education Experimental Project) at Syracuse University provides a laboratory for library school students in which the Library of Congress MARC tapes are searched on the computer. (LEEP, 1969). O'Connor (1967) describes a series of 18 exercises that require a few hours to a few days and that deal primarily with indexing and abstracting.

Who Should Be Taught And Who Should Teach These Topics?

Arguments presented for including library automation and information science as required topics in library schools are also arguments for exposing every library school student to these topics. This presents pedagogical problems, as has been pointed out by Gull and Hayes. Gull writes that the library school students have an insufficient background in mathematics, in logic, and in science and technology. They are unacquainted with the management of large enterprises. As a result, the instructor must spend time on material with which the student should be familiar before he reaches the information science course (Gull, 1965). Hayes' comment that library school students generally lack the technical background necessary for data processing work has already been mentioned (Hayes, 1967).

Who should teach library automation and information science? Gull points to a problem that existed in 1965 and does not appear to have been solved today. He states that the teacher of information science is usually either strong in librarianship but lacks background in mathematics, logic, statistics and engineering or he has the subject background but lacks knowledge of librarianship (Gull, 1965).

SUMMARY AND EVALUATION OF HISTORICAL RECORD

There seems to be agreement that all library school graduate students should be exposed to library automation and information science, and surveys indicate that most accredited library schools offer at least one course, though it may not be required of all students. There is, however, little agreement on specific topics to be included and on testable behavioral objectives of this teaching. The topics under discussion can be divided into four parts:

1. Library automation--data processing, data transmission, reproduction, microfilming, and printing equipment in the library.

2. Systems studies--methodologies for designing and evaluating library services and procedures.

3. Information storage and retrieval systems--abstracting, indexing, and selective dissemination of information.

4. Information science research methodology--basic principles and tools of mathematics, logic, linguistics, statistics, psychology and other disciplines and their applications to the investigation of library-based and communication-related phenomena.

Even if we can agree that the topics should be so characterized, a number of questions and unresolved problems remain. Should information science research methodology be taught as part of the master's program for general librarians? What aspects of the topics should be taught? Should experimental work in progress be included in introductory courses? While there appears to be agreement in principle that library automation and information science should be integrated into the curriculum instead of beng taught in separate courses, the practice is now to offer separate courses. If these topics are to be integrated, should they be integrated into a curriculum based on courses that are offered today or should the curriculum be reconstructed along different lines? Can a revised curriculum be offered in a calendar year and if not is it realistic to lengthen the program? Academe is notoriously slow in instituting changes. Recent events on campus may provide a more conducive atmosphere for change but research is needed on both what changes to make and how to bring them about in the most efficient and effective way. There is also the question of the articulation of the revised generalist curriculum with the information science specialist curriculum.

Teaching methodology is, of course, closely related to what is being taught and the latter must be specified first. Complaints expressed in 1965 about lacks of texts are still valid to a large extent. The _Annual Review of Information Science and Technology_ has been of assistance either as a text or as a tool for selecting readings. Little appears to have been done as yet with programmed texts or computer-aided instruction programs. There are a number of films that can be used as teaching aids. Exercises, demonstrations, and laboratories are being developed and used. And this brings me to the last two topics, the students and the teachers. Gull's (1965) comments that students do not have the necessary background for learning these topics are probably still true today but may no longer be true in a few years when all college students are likely to be exposed to computer programming and the necessary mathematics as well as logic. The teacher who is not a spcialist in library automation and information science and who will have to introduce these topics into his courses will have to be helped by training programs, teaching aids, or other means.

ALTERNATE SOLUTIONS

It is my considered opinion that we are not as yet ready to list fully developed alternate solutions, for the reasons brought out in the previous sections. I have therefore listed parts or components of plans or solutions. Each of these parts or components can also vary. There is another argument for dealing with parts of solutions instead of fully formed ones. The traditional research approach is to divide complex problems into their component parts and to subject these parts to a critical examination. The first three of the eight listed parts are dealt with in some detail in this section.

List of Components of Solution

a. Specific subjects to be taught.

b. Approaches to teaching the subjects.

c. Curriculum structure.

d. Teaching methodology. What technique or combination of techniques should be used to teach the selected subjects?

e. Required educational background of entering library school students. Will we have to change or supplement the requirement of an undergraduate major in the liberal arts?

f. What aspects of the subject are to be taught for academic credit, on a non-credit basis, or required before admittance into the program?

g. Length of program. Is one calendar year sufficient or do we need to lengthen the program?

h. Teachers of subjects. Will we have a generation of teachers who will know both library science as well as library automation and information science? If not, how can we best retrain the present generation of teachers?

a. Specific subjects to be taught.

Specific subjects that might be included in the curriculum are grouped under library automation, systems studies techniques, information storage and retrieval systems, and information science research methodology. The selection of the topics to be included in the curriculum and the extent of coverage of the selected topics will depend upon the state-of-the-art of both the technology and librarianship at the time the program is implemented and on the behavioral objectives of the program. Research needed to determine these factors is listed in the next section.

1. Library automation.

a.) Equipment.

Data processing equipment (unit record equipment; off-line use of computers); data transmission equipment (teletypewriters, telefacsimile equipment); microforming equipment (microfilming cameras, microform readers and printers); reprography including printing equipment (copying equipment; off-set and letter press printing equipment).

b.) Applications of equipment.

The use of the equipment for specific operations in libraries, e.g. acquisitions, cataloging, circulation and reference, either for single operations or combinations thereof, either individual libraries or by or for groups of libraries.

2. Systems studies techniques

Time studies, work sampling, cost studies, flowcharting, forms design and control, mathematical modelling.

3. Information storage and retrieval systems.

Subject analysis, abstracting, indexing, translation, structure of index language, file organization, search strategy, question analysis, testing of systems.

4. Information science research methodology.

Basic principles and tools of mathematics, logic, linguistics, statistics, psychology, and other disciplines and their application to the investigation of library-based and communication-related phenomena.

b. Approaches to teaching the subjects.

1. The applied approach.

Graduates of the library school program are prepared for beginning positions as reference librarians, catalogers, acquisitions librarians, or for beginning positions that call for the performance of a combination of these tasks in today's libraries. Even though libraries are expected to change and even though library school graduates should be equipped to participate in making the changes, it is the primary responsibility of the library schools to educate students for positions in libraries of today. Since the beginning librarian will be a practitioner rather than a theoretician, little if any pure information science is to be part of his curriculum. The emphasis in teaching the topics under discussion should be on applications. Students should be taught about equipment, abstracting, indexing, and systems studies as users of such tools and techniques rather than producers thereof.

2. The theoretical approach.

Principles rather than practice should be emphasized in a graduate program. The theoretical aspects of a subject are its relatively stable and therefore least changing elements. An emphasis on the "why" rather than the "how" will provide the graduate with a frame of reference both for working in today's library and for stimulating reasoned change in the field. For these reasons, pure rather applied information science should be taught.

3. The combined theoretical and applied approach.

While proponents of the theory-only approach have sound theoretical arguments on their side, there are practical considerations that are arguments against such an approach. There is as yet no unified theoretical framework for library automation and information science. Also, the library school student's ability to cope with a theory-oriented curriculum is doubtful at best. An alternative solution is to expose students to directly applicable theory, as for example information retrieval system theory, as well as to applications of tools and techniques. The theoretical aspect of the program can be expanded as more relevant and digestible theory becomes available and as students become more susceptible to such treatment.

c. Curriculum structure.

1. Include library automation and information science within existing framework.

There are several reasons for suggesting this approach. Today's curriculum structure reflects services and operations in today's libraries. Library automation and information science should therefore be included in established courses on materials selection, reference, technical services, administration, and other relevant courses. Library schools are on-going operations and changes within the existing framework are likely to be easier to accomplish and therefore more likely to be accomplished. For a short term solution changes within the existing framework might also be preferable because a new structure should be based on future directions of libraries, something that might not be known for a number of years.

2. Include in a newly developed framework.

The relevance of much of what is being taught in library schools has been questioned. The inclusion of library automation and information science within existing courses would be a patch-up operation at best. It would be preferable to take an overall look at the curriculum in terms of its objectives, how these objectives are now being accomplished, and what alternate ways there are for achieving specified objectives. It is not too soon to begin a systems analysis of the library school curriculum.

NEEDED RESEARCH

In order to make a rational choice of alternatives listed in the last section, the following questions need to be answered:

a. What are the anticipated short term developments in librarianship and related fields? Projections are also needed on technological developments and their likely acceptance by librarians and for anticipated financial support of libraries.

b. What are anticipated manpower needs both in number and in types of skills required? what are the characteristics of individuals that should be attracted to librarianship? How long has the average library school graduate stayed in the profession? How long is the new graduate likely to stay in the profession?

c. What will be the job of the beginning librarian and that of the experienced librarian.

d. What background in mathematics, logic, computer programming and other relevant topics will the college graduate bring to library school?

4. If the function of the library school is to set the pace for the profession, what resources must be provided to the school to enable it to perform this function?

f. Is it realistic to plan a master's program that cannot be completed in a calendar year? What should be done if the answer is no?

g. How can curriculum changes best be implemented?

h. What background and experience should teachers of library automation and information science have?

i. How can teachers of library automation best be trained, retrained, and up-dated?

j. What are the best teaching techniques for achieving specified behavioral objectives?

k. What teaching aids can be prepared to facilitate the task of the individual teacher?

SPECIFIC RESEARCH PROJECT

The integration of the topic of indexing into the library school curriculum.

Objectives: to prepare a plan for teaching indexing in library schools. The plan is to include topics to be taught in specified courses, behavioral objectives and means for testing the achievement of behavioral objectives, teaching techniques and teaching aids.

a. Review of the present state of the art of indexing.

This is to be a review of the literature and of research in progress which would have its objective the identification of available theory, established practice, and needed research. Included in the review would be available knowledge about types of indexes, e.g., alphabetic subject, alphabetico-classified, hierarchically classified, faceted, permuted title, citation, post-coordinate, and machine prepared indexes; index variables, e.g., depth of indexing, level of indexing, source of index entries, vocabulary construction, and amount of information per index entry; search variables, e.g., desired requirements for completeness of search results, current awareness versus retrospective searching, and searching for recall versus searching for discovery; and index evaluation. The review should differentiate between historical aspects, present state-of-the-art and anticipated developments in indexing. Individuals with knowledge in both indexing and librarianship might be asked to prepare a state-of-the-art report. To aid in the identification of anticipated developments, the literature search might be supplemented by interviews with researchers in the field of indexing.

b. The present and anticipated role of indexes and indexing in libraries.

Libraries deal with a variety of records and each record has to be organized, i.e., indexed, in order to be usable. There are internally prepared records that are primarily for internal use, e.g., circulation records, personnel records, and financial records; there are externally prepared records primarily for internal use, e.g., union lists and trade bibliographies; there are internally prepared records primarily for public use, e.g., the card catalog and the list of serial holdings; there are externally prepared records primarily for public use, e.g., published abstracts, indexes, bibliographies, and other reference tools. What is the librarian's function in the preparation, use, and explanation of use to the public of these records? what are additional records likely to be introduced in view of expected changes in the role of libraries and expected changes due to technology? Should there be, for example, an index to users' interest profiles, to individuals' information resources? Should the preparation of some of these records be accomplished with the aid of data processing equipment? What new indexes and index variables might be introduced in libaries? Are some library records, as for example accession books, no longer necessary? The answers to these and other questions must await in part a study of the role and functions of libraries in view of changes that are taking place. It is assumed that this aspect of the subject will be dealt with in another research project and that the findings will be used in determining the role of indexes in libraries. To answer questions about existing records, the preparation of an inventory of types of records in libraries is suggested. Once a list of types of records has been prepared, the function of each record should be determined along with methods for its preparation and use.

c. The relationship of indexing and indexes to other topics that are now taught or to be taught in library schools.

Just as indexing is related to most library operations, it is also related to most topics that are taught in library schools. There is another parallel. It is difficult to specify the role of indexing in a curriculum with as yet unspecified changes. The discussion will therefore have to be limited to existing courses in library schools, with integration of indexing into a revised curriculum (should this be the chosen alternative) to be held in abeyance until we know more about the new curriculum. There is an obvious relationship between indexing and cataloging as well as reference work, one being related to the preparation of indexes and the other to the use of indexes. Related, though perhaps not as obviously so, are courses in selection of materials (indexes are tools used in the selection process) and courses in administration (indexes are prepared and used as aids in the decision making process). The role of indexing in today's library school courses might be determined by looking at descriptions of courses, course outlines and syllabi, and by interviews with teachers.

d. Determining behavioral objectives and measures for determining whether these behavioral objectives are achieved.

What do we want the student to know (his exit behavior) and how can we determine whether he has indeed learned what we want him to learn, are questions that need to be answered. The results of steps a--c in this section should be used as a basis for developing testable behavioral objectives. These objectives as well as tests for measuring the accomplishments of the objectives should be developed in consultation with educational researchers.

e. Teaching techniques.

Where and how, for example, should lectures and films be used? What is the role of texts, both conventional, programmed and computer-aided instruction? How can demonstrations be used to illustrate specified aspects of indexing? How should practice in the preparation, searching and evaluation of indexes be used in teaching? Should the student be asked to participate in either on-going indexing experiments or in the preparation of published indexes and abstracts, as, for example, Information Science Abstracts? If there are alternative ways for achieving specified behavioral objectives, as is likely, controlled experiments with different teaching techniques should be conducted. Library school teachers should draw upon the experience of educational researchers in conducting such experiments.

f. Teaching aids.

Teaching aids will have to be developed to speed the implementation of integrated inclusion of indexing in the curriculum. It should be remembered that the teachers who are to include indexing in their courses are not likely to be experts in this field, so that for practical reasons the development of teaching aids and teaching programs for teachers have to be part of the research program. Teaching aids to consider (in addition to those already available) include the preparation of conventional and programmed texts and computer-aided instruction programs. Videotaped and filmed lectures and demonstrations should also be considered as well as closed circuit television presentations for sharing expert teachers. The preparation of a teaching collection of documents to be indexed along with subject authority lists and questions for searching the index should also be considered. Some of these teaching aids will need to be up-dated on a continuing basis in order to reflect the changes in the field and to correct shortcomings that will have become apparent during their use.

Similar approaches to the incorporation of other topics into the library school, specifically library automation and systems studies, are suggested as additional specific research projects.

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CHAPTER V

RESEARCH NEEDS RELATING TO INSTRUCTIONAL METHODOLOGY -- TO THE METHODS AND TECHNIQUES OF TEACHING IN LIBRARY SCHOOLS

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ABSTRACT

Because it is necessary to comprehend the full range of the newer media, this paper briefly describes instructional television, films, listening laboratories and audio tapes, programmed instruction, computer-assisted instruction, transparencies (overhead projection), tele-lectures, simulation, systems of instruction, and multi-media facilities. Emphasis is given to the newer media utilization in library education, with some concern for the bibliographical control of commercial materials, as well as those prepared through local campus production facilities. Innovation in higher education is examined, and in so doing experimental instruction as well as the improvements in teaching methodology are reported. Following an historical review of the literature specific research proposals are recommended: (1) continued testing and evaluation of the experiments in the newer media now evident in library science curricula; (2) wider demonstration of innovative methodology such as the seminar method and the case study method in instruction; (3) demonstrations by specific library schools which provide scheduled laboratory experience in bibliography and reference work, catalog practice, information storage and retrieval; (4) the essentiality of an autonomous facility for service such as an Instructional Materials Center as an aid to instruction in library education; (5) demonstrations of in-house and locally produced newer media as instructional aids in library education; (6) stimulation and reporting of activities concerned with the organization of, and bibliographical control of, the newer media and materials; (7) provide funding and follow-up for Herman L. Totten's 1966 doctoral study concerned with improving audio-visual instruction in library education; and (8) support from the federal government or from interested foundations to create demonstration and display agencies at selected library schools with funding included for the visitation of interested library school faculty and administrative officers.

PROBLEM DEFINITIONS

> "Every now and then some library school graduate breaks forth with a bitter denunciation of the teaching he or she received at a particular library school. . . . These criticisms inevitably touch a responsive chord in most of us, whether teacher or student, for unless we have been extremely fortunate, we have all suffered under inept teaching in a library school. To be sure, if we are teachers ourselves we know these complaints are not directed at us. Our teaching is above reproach. We suspect that the teaching of our colleagues needs improvement, although we have no way of really knowing, for probably we have never actually sat in on one of their classes, or collaborated with them in any significant way." (Coughlin, 1968)

While concerns with improving library school teaching include many matters other than those which are the purpose of this paper, we would be remiss if we did not point out that the most important consideration is the _quality_ of the faculty. Since this latter subject is being dealt with in another paper, we will concentrate on teaching methodology and the use of the newer media.

At the outset it needs to be understood that the use of the newer communications media goes far beyond previously described audiovisual materials. In order to comprehend the range of our consideration, it seems wise to include sufficient descriptive matter about the newer media in this paper. An important aid in this regard is the volume: _New Media and College Teaching_ (Thornton, 1968). This publication consists of specific comments by the staff of the Higher Education Media Study funded under a contract with the Bureau of Higher Education of the U. S. Office of Education through the co-operation of the Association for Higher Education and the Department of Audiovisual Instruction of the National Education Association. The descriptive sections found in this book include several case studies followed by an institutional inventory with a brief annotation of current practice. This writer has paraphrased and summarized below the descriptive section on each of the newer media with which we will be concerned in library education.

Instructional Television

When educators first thought of using television in instruction, they were often concerned with its special contributions in solving problems stemming from rising student enrollments and a relatively static supply of new doctoral degree holders, many of whom were being enticed into government and industrial service instead of going into college teaching. Some educators also mentioned a special potentiality of the medium for multiplying the effectiveness of specially able professors under arrangements permitting them to teach hundreds or thousands at one time while other less distinguished professors served as discussion leaders with smaller groups in various remote locations.

The present pressing problem is still that of developing course materials that are worth televising, rather than in planning new and more complicated physical installations. In addition to the colleges that are now using closed-circuit television, videotape recorders, inter-institutional broadcasting, and open-circuit instruction for credit, there are fully as many institutions proceeding with plans to introduce one or more of these uses as rapidly as funds and construction of the facilities will permit.

Here are some of the uses of television: (1) Live presentation in a large auditorium. There is the additional option of sending the lecture live to any convenient number of remote receivers, or of taping it for showings at several times and in any number of classrooms. (2) In a large classroom equipped with monitors, or even with monitors in remote classrooms, it is possible to magnify realia (a page from the Gutenberg Bible) or to broadcast microscopic demonstrations so that large numbers of students may view the single visual. (3) The simple microwave transmission of televised signals to receivers at other locations, such as those in a system of colleges where it is either not possible or not economically feasible to staff a given course, or where the specific contribution of some noted lecturer-demonstrator is desired. (4) Some of the most interesting uses of television are those enabling a professor to present and the student to observe events that would be otherwise inaccessible or unobservable, or where the presence of observers would introduce distracting or contaminative elements into the event under study. (5) A self-contained classroom television system--camera, videotape recorder, and monitor--offers exciting possibilities for teaching any sort of skill. As an example, in such diverse fields as student-teaching, storytelling or golf, a practice session allows the learner to see, to criticize, to repeat, and to improve his own performance. (6) Open circuit television courses for college credit are a reality; students have completed work for diplomas by means of broadcast courses.

Films

The motion picture was one of the first "new media" to be used in instruction. The 16mm. silent film has had a forty-year history of utilization in classrooms in this country. Sound and color films became available for teaching almost as soon as they were introduced into theaters. Films still make important contributions to instruction, and several institutions of higher education are actively engaged in film experimentation.

A very useful innovation in film usage has direct application to independent study. This is the 8mm. cartridge-contained "single-concept" film loop. In this form, each film may last only five to ten minutes; it can be checked out from the laboratory stockroom, or from the library, inserted by the student into the projector in a near-by carrel, and viewed as often as necessary. Faculty members who are using or producing films for instructional use uniformly say that the values of both 16mm. and 8mm. films have not yet been fully realized, even after forty years; that they still can serve some instructional functions more economically and conveniently than other newer media; and that new uses and combinations of uses of film with other new media remain to be discovered.

Listening Laboratories and Audio Tapes

The listening laboratory is perhaps the most successful and widely used of the many new media now available to higher education. It seems reasonable to estimate that a majority of colleges have at least a minimal language listening facility for instructional use. A more recent adaptation of the listening laboratory is the dial access system. Under this arrangement, the same types of recording facilities are used. However, the dial access facility emphasizes individual study. Dial access has also made it possible to bring much instruction directly into the living quarters of students.

Programmed Instruction

Programmed instruction is a technique of self-instruction that presents instructional material in small segments, followed by a task that permits the student to demonstrate his comprehension or skill. If he performs the task correctly, he is presented with another sequence of learning-response-judgment; if he makes an error, he must either restudy the same material or "branch" to additional instruction before being allowed to proceed with further instruction. The reinforcement effect of immediate knowledge of success or failure, in such cases, is believed to be a powerful stimulus to learning.

The crucial problem of programmed instruction is that of constructing the programs themselves. The construction of a useful program for college instruction requires not only deep scholarship on the part of the author, but a willingness to analyze the desired behavioral outcomes of instruction in the subject, to state them in hundreds of quite small increments of learning, to foresee the various misconceptions that students might form at each step, to provide reteaching (branching) at each of these points, and to commit the entire program to the appropriate format (printed book, teaching machine, computer).

Computer-Assisted Instruction

While the use of computers in college and university administration has now become rather commonplace, their actual use as adjuncts to instruction at that level appears still to be quite rare and largely in an experimental stage.

> "At the beginning of 1967, after only a very few years of experimentation with the medium, several tentative observations about the potential of true computer-assisted instruction seem to be justified:
>
> "1. It is now possible to present either complete courses or supplementary exercises to college students by means of computer dialogue. Such course material can be made available a considerable distance from the controlling central computer.
>
> "2. The records that computers can provide about the successes and difficulties of each student working through a course will be of crucial importance in improving course materials, no matter in what mode the course will later be presented.
>
> "3. Only a very few complete instructional programs for computers have been developed. Before computer-assisted instruction can be made available to large numbers of students and in most disciplines, a great deal of developmental work is needed.
>
> "4. The installation of computer-assisted

instruction terminals at present is very costly, although expansion of the number of courses and of student terminals, as well as increased experience, will surely reduce the cost. Further experimentation is generally recommended, both because of the light this kind of research can throw on the nature of learning, and in order to determine whether the advantages of computer-assisted instruction balance its economic costs.

"5. The available computer hardware is capable of caring for the instructional calls of 1,000 or more students in several disciplines at one time, without significant delay for any student. The present lack is in variety of software (programs), and in student consoles.

"6. An outstanding advantage of computer-assisted instruction is the provision of detailed records of the progress of individual students, so that the program itself can be constantly improved and revised, examinations can be improved, and individually prescribed exercises can assist each student to learn at his own best rate.

"7. Perfection of a fully flexible program of instruction along the lines under investigation at the University of Illinois and Pennsylvania State University would free instructors for much more individual and small group instruction, and so would increase the effective amount of instruction available to each student.

"8. The promise of the technique has been sufficiently demonstrated that continued experimentation in additional institutions should be encouraged. The Higher Education Media staff realize that the present cost and complexity of equipment are discouraging aspects of the medium. It is probable, however, that additional experience will reduce both cost and complexity to the point at which computer-assisted instruction might become the most economical and effective type of programmed instruction. Continued experimentation to discover the limits of this potential appear to be justified." (Thornton, 1968)

Multi-Media Facilities

The several special types of multi-media facilities that have been developed in institutions of higher learning represent efforts to solve certain problems associated with instructional uses of new media. Included in this category are the single, generously-equipped classroom, the auditorium designed to accommodate large-group presentations backed with appropriate audio-visual elements; and the increasingly popular classroom building containing several multi-media classrooms served by central new media facilities (usually in the core).

Typically, a multi-media installation will combine in a hexagonal or octagonal building a series of triangular rooms of comparatively large capacity (75 to 300 students), surrounding a projection core in which equipment is provided for projection of films, slides, video-tapes, and off-the-air or closed circuit television onto a transparent screen of large size at the front of each room. The multi-media room does enable instructors to realize the goal of quality in large-class instruction--but at a price. Effective utilization of the multi-media installations seems to require that the instructor be assisted by several technicians. In addition, the appropriate use of the equipment afforded in the multi-media room requires planning and rehearsal time of the instructor far in excess of that used in preparing the usual lecture.

Transparencies (Overhead Projection)

The large transparency remains one of the most effective and widely used of all of the new media. The investment in overhead projection equipment might be one of the most rewarding approaches to improved college instruction. Nearly every instructor could find a use for this technique in his classes. The key condition for effective use, to repeat, seems to be the kind of institution-wide encouragement that is signified by the provision of centrally-budgeted assistance of technicians and faculty persons for the instructor who desires to improve his teaching.

Tele-Lectures

Many colleges have been making excellent use of this technique to avail themselves of the instructional contributions of guests who cannot come to campus, but who are willing to devote some time to a telephone-dialogue with a remote class.

One particular program concerns a medical school related to community hospitals for continuing education programs for medical and para-medical staffs. Charts and slides are sent out to each hospital in advance of the presentation. In addition, the hospitals are encouraged to tape the lectures, so that additional physicians may hear and see the presentation at more convenient times. In this program, "live" listeners may ask questions, and all listeners in the network can hear both the questions and the answers. Tele-writer installations may also be used in such instances to provide at various remote locations accompanying sets of correlated drawings (done by hand and transmitted instantaneously to the distant points of use). These and other imaginative uses of the telephone or telephone facilities suggest numerous opportunities for continuing education and for keeping up to date with most recent developments.

Simulation

The technique of simulation of life situations for instructional purposes was rarely reported as an operational technique in colleges and universities. However, industries associated with education report experimentation with the simulation method in the education of business graduate students ("games theory"), educational administrators, and physicians. As an example, school superintendent trainees are provided with a series of "in-basket" problems; their learning experience is to decide what additional information they need to arrive at a decision for action. It seems that simulation technique might be useful with graduate students or even in the continuing education of workers in a field.

Systems

In today's world it is inevitable that we should be concerned with the total process of learning and we are aware that the process is achieved through a system. The system includes all of the equipment, procedures, facilities, program schedules, texts, materials and personnel required to produce the end result. The Higher Education Media Study paid particular attention to systems:

> "The economic realities in higher education today require that a proper distinction be made between the acts of teaching and informing. Two things especially seem to be needed: (1) wider understanding of the fact that simple informing may often be performed quite adequately through the use of materials in listening laboratories, computer-assisted instructional systems, multi-media installations, television networks, etc., and (2) a better understanding of the fact

> that teaching continues to require the in-person contributions of professors in illuminating, elaborating, questioning, and evaluating and in managing the necessary give-and-take involved in exchanging of ideas with students." (Thornton, 1968)

Newer Media Utilization in Library Education

In 1963 the graduate library schools of the country participated in a workshop (Goldstein, 1963) which was based on four premises: (1) that one of the competencies required of library school graduates is a knowledge of new media; (2) that, in the face of present shortages of library personnel, educational television offers one means of extending our present limited library education resources to many people who would not otherwise be recruited for the library profession; (3) that there are now available media and teaching devices which have implications for the teaching of library science, and (4) that by definition library educators must be informed concerning the full range of materials and methodologies which have significant implications for library education.

Three years later Herman L. Totten (1966) began his study of the education media utilization in the teaching of library science in American accredited graduate library schools. The following questions constituted the basic frame of reference of this research: Have educational media, a dynamic force in the teaching profession, had great effect, little effect, or no effect on teaching of library schools? If educational media have affected the teaching of library science, to what extent have their influences been felt? What are the judgments of library science teachers relative to how well these media are being utilized? The dissertation was an effort to answer these questions.

Among the major findings of this study were the following: (1) the basic educational media (equipment and materials) are available to teachers in accredited American graduate library schools; (2) teachers in accredited American graduate library schools feel that educational media play neither a weak nor a strong role in effective instruction; and (3) weak provisions for in-service education in the use of educational media are made in accredited American graduate library schools.

Bibliographical Control of Media

Publication of needed guides and reviewing media concerned with audiovisual materials have been necessary for years. Recently the problem has been compounded by the growth and development, both in size and kind, of these materials. Since 1965 there has been a strong effort by the several national professional societies and government agencies concerned with these matters to press for a solution. Particular encouragement is evident in the establishment of a national cataloging service of audiovisual media. Only with this type of effort will the extent of commercially produced newer media and materials become available. Furthermore, there is a requirement for critical evaluation of nonbook materials and not only a mere listing.

Local Production and Physical Plant Support

The first and most important generalization that must be recognized is that there can be no permanent and lasting effect on improving instruction by the use of the newer media until there is a substantial institutional commitment to this purpose. The commitment includes the following elements: (1) administrative involvement expressed in financial support and in recognition of faculty participation, (2) technical staff to assist instructors in the development of materials and in the operation of technical equipment, and (3) adequate capital investment both in space and equipment so that the physical plant includes appropriate room darkening, necessary conduit, both built-in and free standing items of equipment required for the utilization of the newer media.

Teaching Methodology: Donkey Courses and Elephant Classes

As reported at the beginning of this paper, library school students during their completion of degree requirements, as well as in retrospect after employment, have questioned the content and methodology of library education. The donkey courses filled with their detail and memorization requirements are approved and disapproved by differing groups of students and new graduates. Library school faculty are constantly examining the courses taught in order to insure graduate level teaching. Perhaps the recent statement by Paul Dunkin (1968) describes the problem most accurately:

> "The library school is a monster with two heads: it is a graduate school, but it is also a professional school. The graduate school will try chiefly to make the student think; the professional school will try chiefly to teach him a batch of facts, techniques and routines. One head looks to Pegasus; the other head looks to the donkey."

An even greater difficulty is the large class size. Again, Paul Dunkin (1968) says it particularly well:

> "Elephant classes are artificial growths on the surface of librarianship. We have ourselves produced them, or without thinking we have allowed them to come . . . we can find all sorts of reasons for elephant classes . . . There is always the manpower shortage . . . Librarians get somewhat larger salaries than they once did . . . we cannot stand in the way of people who want to improve their economic status."

The most significant concern with the large class size is the loss of relationship between teacher and student. We must find a way to improve and extend this relationship, without which there cannot be mutual understanding and appreciation in library education.

HISTORICAL REVIEW

Innovation in higher education is not a new phenomenon. It can be seen in the development of the land-grant college and the many experiments that were in evidence in collegiate programs in the 1920's and 1930's. The difference today is the rapid rate of change and acceptance of innovation which may be in the form of: (1) organizational and structural use of the college, (2) new methodologies for instruction, and (3) curricular reform, notably in more effective programs of interdisciplinary studies (Dietrich, 1966, and Cooper, 1966). In response to these concerns, there are several discernable directions in education today.

The first direction is that of quality. Education is providing learning opportunities of greater scope and in greater depth than ever before. Schools are educating for the understanding of principles rather than facts in order to develop a thinking population of people prepared to spend the rest of their lives learning. In other words the task is to teach students how to learn. This objective has not been generally accepted by schools and colleges in the past, although teachers here and there have given it major attention.

The second direction is that of efficiency. Education is developing more efficient instructional processes enabling it to bring more education to more people in wider range and in greater depth. There are increased efforts to improve utilization of expensive facilities and human talent. A true revolution in the sciences and technology of communications and information management is in progress (Carpenter, 1966). Institutions of higher learning must determine what parts of these developments are applicable to the tasks and requirements of education.

The educational system has considerable inertia. Technological change must be regarded not as a revolutionary process but as an evolutionary one. One problem is the well-intentioned resistance to the introduction of technology into the educational process that stems from fear that it will dehumanize a very human process. What is often overlooked is that the human quality and the genuine personal touch are often lost without automation (Rogers, 1966). Technology will assist and support many education functions, thus increasing the productivity of the teaching force and freeing teachers from the multitude of clerical, record-keeping chores and the elementary task of simply presenting information for student consumption. This can restore the personal touch to the educational process.

The third direction is that of individualization. Four points will summarize the direction of education with respect to the individual: (1) encouragement of individual initiative, responsibility and motivation, so that learning becomes person-centered rather than people-centered; (2) development of individual interests and special abilities to allow the individual to establish his appropriate and useful role in society; (3) accommodation of differing individual capacities for learning as well as social and economic backgrounds within the total framework of formal education; (4) development of a sense of personal identification and participation in the learning process, as well as basic learning skills which may be applied in personal learning and self-education (Carter, 1966).

New Media in Higher Education

Within this framework of higher education today, let us now discuss the non-print media. In 1963 the Association for Higher Education joined the Division of Audiovisual Instructional Service of the National Educational Association to produce a yearbook which pointed up the contributions of the new media (Brown, 1963). This volume contained a landmark survey of the character of the uses being made of the new media by colleges and universities in the United States in 1961.

As a follow-up to this report, a new study, mentioned at the beginning of this paper, the Higher Education Media Study (HEMS), was made possible in 1966. The purposes of this project were:

(1) To inventory some of the 1967 instructional uses of new media of communication in college and university teaching throughout the United States. This was done by the issuance of the *Media Activity Inventory-Directory* (Thornton, 1968) which lists some 650 institutions of higher learning in which applications of many different kinds of new media methods were being made.

(2) To provide critical descriptions of the varieties of such utilization, their accomplishments, and their problems. During the period between October, 1966, and January, 1967, each person whose name appeared in the Directory was invited to submit a brief article (of a thousand words or less) describing the nature, scope, and outcomes of each innovated use cited.

(3) The final aspect of the Higher Education Media Study assessed current media applications in higher education by means of personal visits to approximately sixty colleges and universities.

The report, *New Media and College Teaching*, (Thornton, 1968) consists of specific comments by the staff of the Higher Education Media Study on the instructional status of several varieties of new media. As already indicated, this publication is basic in any determination of the research needs in the area of our concern.

Perhaps no other curriculum in higher education has been as involved in the newer media as that of Health Sciences Education. This has been true not only of pre-service education but also in the vast programs of continuing education of the health sciences professions. Invaluable resources descriptive of the most noteworthy activities, are the two reports issued by the National Medical Audiovisual Center (*Toward Improved Learning*, 1967, and *Toward Improved Learning*, v. 2, 1969).

New Media in Library Education

Another milestone was passed in 1963. In that year the graduate library schools of the country participated in a workshop under a U. S. Office of Education grant which resulted in the publication *Implications of the Teaching of Library Science* (Goldstein, 1963).

Sarah H. Reed, then Library Education Specialist, Library Services Branch, U. S. Office of Education, was workshop summarizer. She reported certain observations which were found to recur:

> "(1) When audio-visual methods are used, the spirit in which they are used is important. A teacher should not continue teaching in the same way except for the addition of the new methods. He must not only feel at ease with audio-visual devices, but he must also review and reevaluate his course objectives and teaching methodology. Otherwise the new techniques may detract more than they add. (2) Currently the use of audio-visual aids is made more difficult because of their rate of obsolescence and because the bulk of available materials has not been produced for library school courses but must be adapted with varying degrees of success. This is true both of materials produced by the library profession for certain purposes such as library extension or freshman library orientation, and also of those produced commercially and geared largely to elementary or high school rather than graduate school level. (3) Even when faculty members have identified desirable visual teaching aids, many do not have ready access to production centers. For those with heavy teaching schedules the time and effort necessary to obtain these new materials act as deterrents. (4) Although audio-visual materials can be used effectively throughout the curriculum, such aids, along with programmed instruction, were felt to be particularly appropriate at the beginning levels of library education. By these means a springboard of competencies and knowledges could be developed with full attention to individual needs. (5) Finally, speakers and group participants agreed heartily that to substitute audio-visual aids for printed materials is a misuse of these materials. They are, rather, enrichment materials intended to expedite the learning and teaching process." (Goldstein, 1963).

In March, 1966, Herman L. Totten began his study of the educational media utilization in the teaching of library science in American accredited graduate library schools (Totten, 1966). His investigation included the role of educational media in instruction and the provisions for in-service education in their use. The following were included in the term educational media: educational television, teaching machines and programmed learning materials, recordings, opaque materials, overhead transparencies, slides, film strips, and motion picture film, both 16mm. and 8mm. Significantly, these are in large measure the media reported earlier in this paper.

As a result of the major findings, the following recommendations were made: (1) that each school's institutional educational media center provide a program to cope with the evident existence of teacher inertia in the use of educational media, since such media (equipment and materials) are available for teacher use in accredited American graduate library schools; (2) that each school's institutional educational media center provide for an orientation of teachers in accredited American graduate library schools to the unique role and contribution of educational media to instruction; (3) that each school's institutional educational media center provide for in-service education in the use of educational media, including new instructional devices and materials, whereby teachers in accredited American graduate library schools may be prepared to communicate through the use of educational media.

Improving Library School Teaching

Before examining efforts to improve library school teaching, it seems logical to review first the development of interest in improving college teaching generally. In her paper on this subject, Violet Coughlin (1968) lists the strengths and weaknesses of college teachers:

> Strengths
>
> Well prepared in a specialty;
>
> Competent as research scholars;
>
> Generally high native intelligence;
>
> Generally sincerely devoted to scholarly interests.
>
> Weaknesses
>
> Personal traits--colorless, poor attitude toward teaching, no fondness for students;
>
> Too narrowly trained--can't interpret the meaning of their subject in terms of other or wider areas;
>
> Interest centered in research rather than teaching;

> Lack of specific training for teaching--no knowledge of learning processes, place of motivation, effective techniques of presentation.

Pre-service preparation of teachers for higher education has grown considerably. Most noteworthy have been the Higher Education Act Title II-B fellowships earmarked for library school faculty development. Specialized course work in "college problems" and "improvement of college teaching" are now included in the sequence for higher education at most graduate schools. Student ratings of faculty members are a regular activity at the University of Washington as well as other higher institutions. In connection with doctoral programs in library education, pre-doctoral lectureships have become more common and provide the necessary teaching experience for future faculty members. Furthermore the Sixth Year Post-Master's program in librarianship has also been designated for faculty development purposes. As a particular aid in library science instruction, the Journal of Education for Librarianship has provided us with some papers on "Teaching Methods" (1965). Unfortunately these excellent presentations have been concerned more with content than with methodology.

There is considerable agreement among library school deans and directors with regard to the necessity for the in-service development of faculty. One of the more usual practices is the supervision of a new faculty member by the senior subject specialist in his curriculum area. Methods of instruction as well as instructional resources are the most important basis of exchange and assistance. Frequently the new faculty member may be assisted in his preparation through seminars, retreats or faculty conferences. The most useful device for teaching evaluation is by means of closed circuit television. Since many library schools now have this equipment available, it is considered one of the strongest means for instruction improvement. Paramount, of course, is administrative support for (1) classroom space that will result in the best teaching situation, (2) the availability of appropriate graphic or other production service for instructional aids, and (3) encouragement of faculty in advanced study.

Experimental Instruction in Library Education

Many efforts concerned with computer-assisted instruction, open-circuit and closed-circuit television, and the use of Tele-lecture, separate by and combined with Tele-writer instruction, have been tried and proved successful. At least two of these experiments have been reported in formal documents. Marguerite Baechtold, (1968) in connection with the partial fulfillment of her

Educational Specialist Degree, explored the matter of two-way amplified telephone communication in the teaching of selected library science courses. She explored the possibility of teaching the basic Reference Service Course on the campus at Western Michigan University and simultaneously taught an extension class some distance away. Mrs. Ann M. Fox has accomplished the same experiment in the beginning course in cataloging at the Graduate School of Library Science at the University of Illinois. Both experimenters enthusiastically recommend the development of conclusive data about the nature of library science courses suited to Tele-lecture teaching.

The Library Education Experimental Project (LEEP) has been under way one year at the School of Library Science, Syracuse University (1969). The objectives of this project, which is supported by a U. S. Office of Education grant is that it serve as a test site of an LC/MARC laboratory where students in the library school can relate their problems in cataloging and reference courses to the processing and retrieval procedures possible in mechanized library systems with the MARC magnetic tapes as the data base, and that it provide the library education field with first-hand knowledge of how a computer-based laboratory for library science students could be utilized.

The Institute of Library Research at the University of California, Berkeley, also under a grant from the U. S. Office of Education, has just completed the final report of Phase I of its study concerned with an Information Processing Laboratory for Education and Research in Librarianship (Maron, Humphrey, Meredith, 1969). This study involves computer assisted instruction in cataloging and reference. In addition associative and probabilistic search strategies will be developed.

While there are few publications readily available, there will be additional reports soon. The further testing of these experiments by the library schools of the country will make certain improved utilization of the newer media with insured success in library science instruction.

SUMMARY AND EVALUATION OF THE HISTORICAL RECORD

During the last ten years the amount of literature about programs of higher education has increased exponentially (Mayhew, 1969). This period has seen an enormous growth of offices of institutional research, an evolution of centers for the study of higher education, an expansion of research budgets, and a shift from disinterest to some concern for the study of higher education by people in academic disciplines. Most of the published literature available consists of conference reports and near-print documents rather than hard-covered books.

Each spring the Association for Higher Education, an affiliate of the National Education Association, conducts an annual conference of higher education and publishes the texts of papers under the title "Current Issues in Higher Education." All suggest the dynamic quality of colleges and universities during this period of intense growth (Association for Higher Education, 1965).

The U. S. Office of Education, sensing the need for the practitioner of education to know of new developments and research results, initiated a new pamphlet series under the title _New Dimensions in Higher Education_. Several of these pamphlets are not available in published form but may be secured in hard copy or microfiche from the ERIC Agencies.

The Center for the Study of Higher Education of the University of California at Berkeley and the Western Interstate Commission for Higher Education have since 1959 sponsored summer workshops, each of which has resulted in collections of published papers. This series has brought together perhaps the freshest approach on each of the topics covered.

In 1967 the Carnegie Commission on Higher Education was established with Clark Kerr, former President of the University of California, as its chairman. Most of the financial support for the Commission comes from the Carnegie Corporation of New York. The Commission is concerned with eight general areas of inquiry: the functions of higher education; the structure of higher education; the governance of higher education; innovation and change; the demand for higher education; expenditures for higher education; available resources for the support of higher education; and effective use of resources. The first project completed under the Commission's auspices was a comprehensive inventory of current research on higher education (Heckman, 1968). The subject interest of this paper has many references in this inventory.

Under the leadership of Samuel Baskin at Antioch

College, the Union for Research and Experimentation in Higher Education has held workshop conferences to foster innovation in higher education. These have resulted in several significant mimeographed publications, and may have stimulated considerable improvement in college teaching (Baskin, 1967, and Workshop Conference to Foster Innovation in Higher Education, 1966).

Advances in instructional technology were in part the cause for the authorization of the A-V Task Force survey by the American Library Association during the spring and summer of 1967. Many of the problem areas developed in this paper, as well as additional new areas of concern, have been recommended for action in the published report (A-V Task Force Survey - Final Report, 1969). The strongest action was requested in the bibliographical control of the newer media and the improved preparation of new librarians. The latter might be hastened with the establishment of accreditation procedures which would require the inclusion of instruction in the newer media in library education. There was a recommendation for the setting up on selected libraries as demonstration and display agencies similar to those in the Knapp School Libraries Project for elementary and secondary schools. Full implementation of improvement in audio-visual instruction in library education might come from an examination of advanced "communication" courses available in library schools, schools of communication and schools of education.

TENTATIVE SOLUTIONS

From the foregoing it is self-evident that the broadest approach to the newer media must be included in both pre-service and in-service library education. More than lip service is required, in fact real implementation by the demonstration method seems to be the only solution for nation-wide acceptance and utilization.

Administrative support both financial and directional will be the only basis for achieving this innovation in library education. Local production staffs with expertise and knowledge in the preparation of instructional aids will be necessary if teaching methodology with the newer media is to be accomplished. Furthermore, having the possibility of the materials and equipment is insufficient unless the buildings in which these materials are used are also prepared for this purpose. The planning of library education space, as evidenced in the University of Toronto Library School building program, should be examined prior to development of new or rehabilitated physical plants in the library schools on this continent.

While some effort has been made to list audio-visual materials useful in library instruction (Lieberman, 1968), immediate updating is mandatory. The inclusion of evaluation in addition to listing will insure the best possible teaching aids. The non-commercially produced materials which are not listed in normal bibliographical publications will also have to be indexed. In this way there can be free exchange of information and even duplication of locally produced materials which will assist in improved instruction.

To return to the increased enrollments in library education, ways and means for lowering the faculty-student ratio is of paramount importance. This may be accomplished by more selective admission. However, it would serve a more useful purpose if new directions in teaching such as the case study method at Simmons College and Indiana University, and the seminar method at the University of Western Ontario might be duplicated in other library schools.

Finally, we must disseminate selected information to library school faculties from the published and unpublished reports of such bodies as the Association for Higher Education, the Bureau of Higher Education of the U. S. Office of Education (New Dimensions in Higher Education Series), the Center for the Study of Higher Education of the University of California at Berkeley, the Union for Research and Experimentation in Higher Education located at Antioch College, and the Carnegie Commission on Higher Education, Berkeley, California. This will insure that information concerning innovative practices in higher education is readily available to library educators. At the same time new developments in methodology among the individual library schools must also be reported regularly to the total group. Through exchange and continued experimentation continuous progress is insured.

RESEARCH NEEDS

I. Testing and wider utilization of recently completed experiments with newer media and materials in the library science curriculum.

A. University of California (Berkeley)--Cataloging as taught by computer-assisted instruction.

Information Processing by computer-assisted instruction.

B. University of Hawaii--Children's Literature through the medium of television.

C. University of Illinois--Cataloging and Classification by means of Tele-lecture. Library Automation and Mechanization by means of videotape recording.

D. University of Michigan--Storytelling through the medium of television.

E. University of Oregon--Children's Literature through the medium of television.

F. University of Pittsburgh--Cataloging and Classification with the use of overhead projector transparencies.

G. Syracuse University--Library Education Experimental Project (LEEP).

H. Western Michigan University--Reference Instruction by means of Tele-lecture.

Explanation: A wide variety of experiments has been conducted in several of the accredited library schools. Unfortunately, the experiments have not been reported in sufficient detail so that they might be duplicated in different locations. This writer recommends that there be a sharing of these experiments which would result in testing and wider utilization, thus benefiting all library schools.

II. Demonstrate more widely and test the following methodology in library education:

A. Seminar Method (University of Western Ontario--Osborn)

B. Case Study Method
  1. Library Organization and Administration (Indiana University--Lowell)
  2. Reference Instruction (Simmons College--Galvin)

C. Field Work or Supervised Internship (University of Washington)

Explanation: New methodology in library education, particularly the Case Study Method and the Seminar Method, warrant consideration by more or all of the library schools. While there has been some reporting of this methodology, the only evidence is on the individual campuses. This writer recommends that there be a sharing of the new methodology which would result in testing and wider utilization, thus benefiting all library schools.

III. Test and evaluate pre-service and in-service scheduled laboratory experience:

A. Bibliography and Reference Work

B. Catalog Practice

C. Information Storage and Retrieval

Explanation: In the past, laboratory experience in cataloging was fairly general in all library schools. Today the areas of reference and information processing are also treated in a laboratory sequence. Broader experience is a requisite for wider utilization.

IV. Determine the requirement in order to design a program:

A. To cope with teacher inertia relative to the use of newer media;

B. To orient teachers to the unique contribution and role of the new media;

C. To provide in-service education for library school faculties on the use of the newer media.

Explanation: Wide involvement is necessary if change is to be experienced within the faculties of the various library schools. Exchange of information is the basic requirement here.

V. Survey and report the technical services activities and programs concerned with the organization and bibliographical control of the newer media and materials.

Explanation: Serious deficiencies are in evidence with regard to the cataloging as well as the critical evaluation of the newer media.

VI. Survey the extent of *in-house* and *local* production of newer media as aids for instruction in library education.

> *Explanation*: Several of the library schools have experience with local production. There needs to be a listing of the items produced and an effort to create an exchange service.

VII. Test essentiality of an autonomous facility and service, such as an Instructional Materials Center as an aid to instruction in library education. In other words, library schools' own resource facility versus integrated facility in the University Library.

> *Explanation*: The question is whether or not each library school should have its own library or make use of the General Library of the University in which it is located.

VIII. Preparation of an instrument to secure from the accredited library schools an inventory of the use of items listed in *Working Bibliography of Commercially Available Audio-Visual Materials in the Teaching of Library Science*, Occasional Paper No. 94 of the Library School of the University of Illinois.

> *Explanation*: *The Working Bibliography* . . ., Occasional Paper No. 94 was published in 1969. If the inventory is to be useful it must be started at once.

IX. Prepare a work sheet for gathering information by which to "up-date" *Working Bibliography of Commercially Available Audio-Visual Materials in the Teaching of Library Science*, Occasional Paper No. 94 of the Library School of the University of Illinois.

> *Explanation*: *The Working Bibliography* . . ., Occasional Paper No. 94, was published in 1969. If the up-dating is to be accomplished, it must be started now.

X. Establish the circumstances with Herman L. Totten (Wiley College, Marshall, Texas) for follow-up to his 1966 doctoral study in order to make further determination on newer media criteria found effective for library education and survey of newer media utilization in both accredited and non-accredited graduate library schools. Study the background and point of view of the library school administrator as well as the library school faculty regarding innovation in curriculum development and receptivity to the newer media.

> Explanation: There is great likelihood that an ALA LED committee will be up-dating the evaluative instruments used in the Herman L. Totten doctoral study.

XI. Identification and setting up of selected library school programs as demonstration and display agencies (not unlike the demonstration programs with the Knapp School Libraries Project in the Sixties).

> Explanation: Financial support to make possible the best possible practice and the demonstration of that practice would be most valuable in improving library education.

XII. Study of the existing "communications" courses available in library schools, schools of communication, schools of education, etc., in order to create an environment for much needed co-operation and know-how.

> Explanation: Because of the existence of curricula in this field in educational agencies other than library schools, it would serve a useful purpose to examine the programs in order to make possible the most efficient and economical curriculum in the library schools.

SPECIFIC RESEARCH PROPOSALS

I. Organize conferences on a regional basis for demonstration of existing experiments with the newer media in library science curricula such as:

A. University of California (Berkeley)--Cataloging as taught by computer-assisted instruction.
Information Processing by computer-assisted instruction.

B. University of Hawaii--Children's Literature through the medium of television.

C. University of Illinois--Cataloging and Classification by means of Tele-lecture.
Library Automation and Mechanization by means of videotape recording.

D. University of Michigan--Storytelling through the medium of television.

E. University of Oregon--Children's Literature through the medium of television.

F. University of Pittsburgh--Cataloging and Classification with the use of overhead projector transparencies.

G. Syracuse University--Library Education Experimental Project (LEEP).

H. Western Michigan University--Reference Instruction by means of Tele-lecture.

These are to be followed by testing and evaluation of the efforts in some of the library schools of the country under the supervision of a project director (generally the initiator of the original experiment). Included in the evaluation would be a report on the feasibility of duplicating experimental materials in quantity for rent or for sale to the library schools of the country.

II. Organize conferences on a regional basis for demonstration of innovative methodology in library education such as:

A. Seminar Method (University of Western Ontario--Osborn)

B. Case Study Method
   1. Library Organization and Administration (Indiana University--Lowell)
   2. Reference Instruction (Simmons College--Galvin)

C. Field Work or Supervised Internship (University of Washington)

These are to be followed by testing and evaluation of the efforts in some of the library schools of the country under the supervision of a project director (generally the original initiator of the innovative method). Included in the evaluation would be pre-service and in-service interviews of students involved.

III. Demonstrations at specific library schools which provide scheduled laboratory experience as follows:

A. Bibliography and Reference Work

B. Catalog Practice

C. Information Storage and Retrieval

Support would be provided to make possible library school faculty visits similar to demonstrations in Knapp School Libraries Project.

IV. By interview schedule under a project director, visit selected library schools, test the essentiality of an autonomous facility and service such as an Instructional Materials Center as an aid to instruction in library education. (A mere questionnaire has already been tried without results in securing the information desired.)

V. Organize a conference for demonstration of in-house and local production of newer media as aids for instruction in library education. (N.B. The University of Illinois Library School has under consideration such a conference for Autumn, 1970.) Detailed interview schedules must be prepared in order to be certain that comparable data is available for the compilation and later dissemination of the findings. It may be necessary to schedule visits as follow-up to the interview schedule in order to accomplish the purpose of the compilation.

VI. Reproduce and disseminate to library school faculties selections from the published and unpublished reports of such bodies as the Association for Higher Education, the Bureau of Higher Education of the U. S. Office of Education (New Dimensions in Higher Education series), the Center for the Study of Higher Education of the University of California at Berkeley, the Union for Research and Experimentation in Higher Education located at Antioch College, and the Carnegie Commission on Higher Education, Berkeley, California. Such documents concern innovative practices in higher education. Through this means and the organization of a conference of library school faculty, we will be able to design a program:

A. To cope with faculty inertia relative to the use of newer media;

B. To orient faculty to the unique contribution and role of the new media;

C. To provide in-service education for library school faculties on the use of the newer media.

VII. Stimulate the reporting of activities concerned with the organization of, and bibliographical control of, the newer media and materials. This can be done through revitalization of the Education Media Council which includes 14 interested associations, one of which is the American Library Association.

VIII. Provide funding and request a follow-up by Herman L. Totten (Wiley College, Marshall, Texas) of his 1966 doctoral study. He is preparing new instruments for the survey and gathering comparable data to give us further direction in improving audiovisual instruction in library education.

IX. Through appropriate support from a national level, either through grants from the federal government or from interested foundations, create demonstration and display agencies at selected library schools. Financial support would make possible not only local production but also the visitation of interested library school faculty and administrative officers.

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PART II SECTION B: ORGANIZATION

CHAPTER VI

RESEARCH NEEDS RELATING TO LIBRARY SCHOOL ADMINISTRATION

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ABSTRACT

The paper on "Research Needs Relating to Library School Administration" recommends research in the following areas: ways and means of obtaining close coordination between library education and library service; methods of integrating the library school with the university as a whole; the most desirable internal organization of the school, including provision for faculty and student participation in decision making; the validity of generally-held ideas and practices concerning library school space of various types, and the kinds of equipment needed to make teaching, study, and research more effective; faculty recruitment, including the kind of preparation desirable in library school instructors, how the shortage of teachers can be met, the use of instructors from other fields, and the size of faculties; student admissions and related problems, including the most desirable pre-professional background for students, how to predict probable success in the school and afterward, problems of foreign students, varieties of financial assistance, and placement services; the nature and content of a basic curriculum and the prevention of excessive overlapping and important omissions among courses; the programs and methods of operation of existing research centers; how to stimulate and to encourage research by individual faculty members; the nature and quality of library school publications, the need for publications in areas inadequately covered, and problems of duplicative publishing in certain areas; and library school financing, including such matters as sources of funds for various types of activities, additional prospects for support, basic budgets, and student aid.

Practically every aspect of library school administration has developed pragmatically, unsupported by objective research. Current practices could be improved and library education strengthened by unbiased research studies in the fields of administrative organization, physical facilities, faculty recruitment, student admissions and placement, curriculum, research programs, and financial support.

DEFINITION OF PROBLEMS

The present article, after a brief historical review, will consider the following aspects of library school administration and research needs relating to problem areas:

Administrative organization.

Physical facilities, including location, library science libraries, special laboratories, equipment, classrooms, and offices.

Recruitment of faculty, including questions of experience and academic preparation, and use of library staff members and non-library specialists for teaching.

Student admissions, including academic standards, interviews and standard tests; problems of foreign students, financial aid for students, and placement of graduates.

Coordination of library school activities and programs with the university library, the university in general, and the area in which the school is located.

Financial support from state appropriations, institutional budgets, federal and foundation grants, endowments and gifts.

Curriculum matters, such as problems of establishing a solid core, recognition of new trends, non-library science courses, participation of faculty and students in curricular planning.

Research activities, including establishment of research centers in library schools, encouragement of faculty research, and publishing.

HISTORICAL BACKGROUND

Formal education for librarianship as a profession began in the United States in 1887. The pioneer institution in the field was Melvil Dewey's School of Library Economy at Columbia University. The Columbia and other early library schools, following Melvil Dewey's leadership, were heavily weighted on the practical side, emphasizing perfection in technical details and preparing students to step directly into the management of library routines. In many of their aspects, the programs resembled an apprentice system.

For thirty-five years after the creation of the first school, changes in library education were gradual and far from radical. Stress continued to be placed on producing working librarians, familiar with and ready to apply in practice all the usual routines of library operation. Nevertheless, there was considerable ferment in the profession. Criticism was freely expressed of various curricular offerings, there were calls for higher standards, for going beyond technical education, for a national system of training, for better prepared faculties, and for some machinery for evaluating the schools. Three concepts that were deeply to affect American library education emerged by the end of the nineteenth century: the conviction that library schools should be affiliated with universities, college graduation should be required for admission to a library school, and an examining board with clearly defined authority should be established.

The Williamson report, sponsored by the Carnegie Corporation, focused attention on he low quality of library education in the United States in the early nineteen twenties and analyzed in detail the reasons for the condition. Equally as important, the study presented numerous statesmanlike recommendations for the correction of weaknesses and for creating a system of professional library education of a high order. Subsequently, the existing library schools unaffiliated with institutions of higher education suspended operation or were merged with universities; the Board of Education for Librarianship was established by the American Library Association for accreditation of library schools ; and there was increased emphasis on graduate study and degrees, including doctoral programs.

A continuing topic of concern in library education is whether the schools should aim at producing specialists or generalists, and the question is raised frequently as to the practicability of the schools preparing librarians for all kinds of library work. Most library school curricula have compromised, devoting the first period to basic general studies and afterward giving students opportunities to specialize in particular fields.

ADMINISTRATIVE ORGANIZATION

For the first fifty years or more of their history, library schools were headed by library directors, i.e., the director of the university library served also as head of the library school. In recent years the arrangement has been almost completely altered. New schools have been established with a director quite independent of the library system, and older schools, one by one, have separated the two positions. The director of the library may serve in an advisory capacity and occasionally teach a course, but has no administrative control over the school. In general, the change has been beneficial to both organizations. As institutions have increased in size, curricula have become more diverse, and administration more complex, plus the fact that a library and a school have different missions and problems, the desirability, if not the necessity, of separating the positions became evident. No one individual has the time and energy to do full justice to the varying requirements of the two demanding jobs.

On the other hand, something worthwhile may have been lost in the change-over. The library is the library school student's natural laboratory, and there ought to be the closest possible corrdination between library education and library service. Full integration may be most effectively achieved if there is common direction. In the case of smaller schools and libraries, unable to afford two top salaries, a combined position may attract a more outstanding individual, assuming that he is equally interested in both functions. Another consideration is that a library school director completely separated from the practical aspects of librarianship can become lost in theory and out of touch with the needs of the profession--as may other members of a library school faculty.

Since there is no probability of return to the old pattern of organization, a proper subject for research would be to investigate ways and means of retaining some of the advantages of unified direction while maintaining the school's autonomy.

INSTITUTIONAL ORGANIZATION

In the past, it was not an infrequent practice to establish the library school as a division of a larger educational unit, e.g., a college of liberal arts and sciences or a college of education. The trend, however, is strongly in the direction of a separate, more or less autonomous organization for the school. A recent example is at the University of Michigan, where the Department of

Library Science in the College of Literature, Science, and the Arts in 1969 became the School of Library Science.

It should be noted that the founder of the Michigan school, William Warner Bishop, firmly believed that it would be advantageous for a library school to be directly associated with a general college, because of the intellectual stimulus and the contacts thereby provided with scholars in other fields. Otherwise, there is a danger of the school becoming isolated, out of touch with major educational currents, and provincial in outlook. The risk is not imaginary, even though the benefits to a school in being autonomous and in control of its own destiny are obvious. Methods of obtaining close integration with the institution as a whole are an appropriate field for study, through such devices as joint faculty appointments with other departments, cooperative research (for example, in the applications of technology to library operations), and utilization of pertinent curricular offerings of other divisions of the university.

Internal Organization

The typical library school is headed by a dean or a director, assisted in larger institutions by an assistant or associate dean. The extent to which the faculty participates in the administration of the school varies. Large schools customarily provide for an executive committee to work with the dean, or the faculty may act as a committee of the whole in such matters as policy formulation, curricular revisions, and admissions.

Ordinarily, the size of a library school does not justify its organization by departments, as is done in colleges. If the program is sufficiently complex and diversified, however, separation into distinct units may be useful. An example is the University of Pittsburgh's Graduate School of Library and Information Science which has recently been reorganized into two departments, Department of Library Science and Department of Information and Communication Science, each with its own head.

In the current era of student activism, with vociferous demands for participation in decision making and a direct role in educational policies and administration, library schools must recognize and make provision for student voices to be heard in their affairs. How can the most effective use be made of the students' desire to aid in educational reform and to make library school programs more relevant to their needs? Research on the problem is essential, both to avoid schismatic conflicts and for the schools to gain maximum benefits from the ideas of highly intelligent and thoughtful students.

PHYSICAL FACILITIES

Two issues of the Journal of Education for Librarianship, in the summer of 1964 and the fall of 1966, are devoted to articles on library school quarters and equipment, and Keyes Metcalf's Planning Academic and Research Library Buildings (1965) contains a section on the subject. The American Library Association's "Statement of Interpretation to Accompany the Standards for Accreditation" recommends that library school quarters should be located as a unit in the main library building or in close proximity to it. A majority of library schools follow this plan, though in the recent past several schools have broken away and moved into separate buildings. Do they thereby achieve a more definite identity?

Metcalf recommends that "a library school be placed in the library when possible . . . If the school is in the library building, the students are close to the general library collections which serve as their laboratory." Could not this argument be offered by other departments in the university? Not all divisions use library resources as extensively or intensively as do students of library science, but certainly faculty members and students in the humanities and social sciences would be pleased to be housed adjacent to the literature of their fields. Would library science classes be any more inconvenienced than those in English, history, or political science by meeting in regular classroom buildings outside the library? Could not library school faculty members be assigned offices elsewhere, as are those in other departments?

Despite such questions, locating the library school in the central library is so obviously desirable that it scarcely needs defense. Students of library science are not studying books alone, as are students in subject disciplines. They are absorbing the atmosphere of a library and being provided with opportunities to observe and possibly to participate in the day-to-day operations that go on constantly in a large library. A process of osmosis occurs that would be lost if students were separated from the general library. The relationship is analogous to that between a medical student and a hospital.

If the principle is accepted that the library and library school should not be disassociated, the ideal procedure is to plan for the library school's requirements at the same time that the library building as a whole is being programmed. It is highly desirable for the school's facilities to be concentrated in one area, preferably in a wing or other unit which may be expandable at a later date as the school grows. Flexibility in space is as necessary for the school as for the library itself.

The tradition of a separate library for a library school is long standing. Certainly, students and faculty would waste a substantial amount of time hunting for their materials, if the latter were not conveniently segregrated in a collection apart. On the other hand, it is a valuable learning experience for students to become acquainted with the total resources of a university library. Any attempt to develop a self-sufficient book collection in the library school library is probably inadvisable. The scope might be restricted to providing a strong, well-selected, up-to-date assemblage of books, journals, pamphlets, slides, and films, relegating to the general library collections of out-dated, little-used materials, such as earlier editions of books, older files of periodicals, individual library reports, and most foreign-language publications. Heavily-used encyclopedias, dictionaries, bibliographies, and similar reference books should be present, but the general library should be relied upon for more specialized, less-used works. Altogether, approximately 15,000 volumes appears to be a reasonable size for a well-balanced, live library science library.

In addition to a traditional book-form collection, a modern library school provides space for pertinent films, filmstrips, sound recordings, tapes, mounted pictures, microforms, and various types of equipment associated with audiovisual materials. Furthermore, if laboratory collections are maintained of literature for children and young people, for cataloging and classification practice, or other categories outside the field of library science proper, space must be found for them.

To accord with current trends, seating in the library school library ought to be provided for not less than 50 percent of the full-time enrollment and 75 percent is not excessive. Individual carrel-type seating should predominate, though no attempt need be made to return to the early days of library education, when it was the style to supply individual student desks. Individual lockers are more satisfactory and less space consuming. In order to take advantage of programmed learning, "wet" carrels are advisable, electronically equipped for individual instruction through tape decks, earphones, and closed circuit television reception.

Classrooms associated with library school will vary in size, if they are to meet satisfactorily the school's requirement for diversity. An auditorium large enough to seat the entire student body and faculty will be highly useful for convocations, lectures, colloquiums, institutes, and similar events involving the whole school. Other rooms for instructional purposes will range down in size to seminars for 10 to 15 students.

Brian Land, Director of the University of Toronto School of Library Science, (1966) recommends:

> "All classrooms should be provided with chalkboards, bulletin boards and book shelving; motorized hidden drop screens and sound systems for film, slide and overhead projection; rheostat control of lighting; sound outlet jacks for concurrent use with projectors or for independent public address uses; intercom outlets for public address systems; telephone outlets for long distance conference telephone circuits; and outlets for television monitors and for FM radio broadcasts."

Provision may also need to be made for specialized functions assumed by a library school. Three examples are: (1) a research center such as has been established by the Illinois, California, Pittsburgh, and Western Reserve schools, with separate staff, offices, and other facilities; (2) a publication office, if the school is active in publishing and editing; and (3) a placement division, a service to find suitable positions for new graduates and older alumni.

Not the least important of a library school's space requirements, if staff morale is to be maintained, are adequate faculty offices, particularly for senior staff members. An average of 110 square feet per person is a recommended minimum, located as near as feasible to classrooms and library facilities.

Research studies testing the validity of generally-held ideas and practices concerning library school space of various types and the kinds of equipment needed to make teaching, study, and research more effective are greatly to be desired.

FACULTY RECRUITMENT

Rothstein (1966) and others have pointed out that the qualifications expected of a professor of library science are almost unattainable in one individual. He must be respectable academically, meaning ordinarily the holder of a doctoral degree, either in librarianship or in a subject field. He must have a background of experience as a practicing librarian, preferably in his teaching field. Aptitude for research and scholarship must have been demonstrated by a record of publication. Furthermore, it is expected that his teaching ability will be superior, his personality attractive, he will be a good committee member, active in professional associations, and a participant in community affairs. Naturally such a paragon is virtually unprocurable and a school will have to settle for less.

The prime criteria for appointments to the faculty should probably be teaching ability and academic qualifications. As a component of a university, the library school cannot afford to have standards for academic appointments lower than the institution as a whole. A good teacher also needs a period of practical experience to avoid a too theoretical approach in his classes; his teaching will be strengthened by an interest in writing and research; and he should be a congenial colleague who enjoys teaching and likes students.

An acute shortage exists of academically well-qualified candidates for teaching positions, despite the increasing number of doctoral programs in graduate library schools. If the doctorate is a prerequisite for senior faculty appointments, however, it may not necessarily be in library science. For some areas, a master's degree in library science and a doctor's degree in a subject field, say one of the sciences, may be an excellent combination. Some library school deanships, e.g., Chicago, North Carolina, and Rutgers, have been filled by non-librarians, specialists in automation and information sciences.

University library staffs frequently have members who are well qualified to teach and who may be drawn upon occasionally to complement the regular faculty. An illustration is the practice at Illinois of offering advanced bibliographical courses in their fields taught by departmental or divisional librarians in biological sciences, chemistry, education, engineering, law, maps, music, mathematics, and Slavic literature. The curriculum may also be enriched by listing and offering credit for relevant courses in other university divisions, within reasonable limits.

The size of a library school faculty will vary, of course, with the number and level of courses offered, the size of classes, student enrollment, and the teaching load. A well-rounded curriculum will require a minimum of ten full-time instructors, based upon actual numbers presently found in accredited library schools. In addition, a staff of teaching assistants and secretarial help will be needed to relieve the faculty of routine and clerical tasks.

These, then, appear to be the most urgent areas relating to faculty recruitment in which research is needed: the kind of preparation desirable in library school instructors, how the shortage of teachers can be met, the use of of instructors from other fields, and the size of faculties.

STUDENT ADMISSIONS AND PLACEMENTS

Only a few years ago, student recruitment was a major problem for a majority of library schools. There was considerable difficulty in attracting to librarianship the number and quality of students desired. As general university enrollments have grown and an increasing number of students go on to graduate and professional study, the problem has largely vanished. Enough applications are now received, at least by leading schools, to make possible a higher degree of selectivity in admissions.

The most reliable index for predicting success in library school is a student's undergraduate grade-point average. A mediocre undergraduate record is an almost infallible indication of an unsatisfactory career as a graduate student, and perhaps later as a librarian. For its own protection and for the good of the profession, therefore, a library school's admissions should be guided primarily by records of academic excellence, supplemented by standard tests.

Letters of reference, especially from librarians, may be useful for admission purposes. Also, interviews with the dean of the school and members of the faculty, if practicable, will shed light on such matters as attitude, appearance, and personality prior to admission.

Students from other countries, especially those whose native language is not English, present special problems. They should be required before admission to demonstrate an acceptable level of proficiency in the English language; otherwise, scholastic difficulties for them are inevitable. In any case, foreign students are likely to need more individual attention and tutoring than do other students, and admissions should be limited to the number which the library school administration and faculty can accommodate without neglecting other students.

If the most promising students are to be drawn into the library profession, financial aid is essential. In the sciences, nearly all graduate students are subsidized in one way or another, and the trend in professional schools, such as library science, is in the same direction. Among standard forms are fellowships provided by endowments, by the university itself, by professional associations, state libraries, and federal agencies, varying in value all the way up to those which cover a student's total expenses for the period of study. More numerous are scholarships, which ordinarily, cover tuition and other fees. Assistantships, on a salaried or wage basis, in the library or library school, have long been popular and possess the dual advantage of providing work experience and financial support for students. Finally, student loan funds are available in nearly all institutions from endowments, government grants, and other sources.

Placement Services

Traditionally, library schools provide placement services for their graduates. In some instances, a school may feel responsible only for finding an alumnus his first position, after which he is on his own. Others attempt to keep in touch with their graduates, in order to aid in their professional advancement, to find higher-level jobs for them if merited by their records, and to be certain that they are engaged in the kind of work for which they are best fitted.

Because good placement service is demanding of a school in terms of staff, time, and finances, a few schools have unloaded the entire operation on central placement agencies. The results are generally unsatisfactory from the point of view of both the employer and employee. A large university placement organization is necessarily impersonal, without direct knowledge of individuals, and largely mechanical in function. A more personal service, operated by the school and involving the faculty and administration will win the gratitude and loyalty of alumni and the appreciation of prospective employers. Much of the work can be treated in routine fashion, of course, by the preparation of individual information folders, letters of reference, statements from past and present employers, etc., but frequently supplementary comments by instructors and others well acquainted with an individual's personality, special talents, interests, and perhaps idiosyncrasies are invaluable in finding the right job for the right student.

Suggested topics for research relating to students might include studies on the most desirable pre-professional background, methods of predicting probable success, problems of foreign students, varieties of financial assistance, and placement services.

CURRICULUM

The building of a strong curriculum is a task properly shared by the library school faculty and administration, and some consultation with students and alumni may be well advised. Unless the school wishes to depart too far from standard practices, there will be a solid core of courses dealing with such basic areas as cataloging and classification, bibliography and reference, book selection, and library administration. A good research topic would be to determine the nature and content of a basic curriculum.

In addition, it is desirable that each school develop one or more specialized areas in which it has particular competencies to lend distinction to its program, assuming that there is a clear need for them in the profession. Examples are preparation of librarians for special types of libraries, such as law, medicine, music and fine arts; archival training; audio-visual education; and information science and systems. Sound programs will avoid, however, going overboard for passing fads, e.g., basing the curriculum on the notion that the book is obsolete and will be completely replaced by automation and the computer.

Too much overlapping and important omissions among courses can be prevented by requiring each instructor to prepare detailed outlines and perhaps syllabi for the courses for which he is responsible. Copies supplied to other instructors and consultations among the faculty as a whole will call attention to duplication or lacunae in course content. These devices have particular value in the case of visiting professors and summer session faculty who may be unfamiliar with school's offerings.

RESEARCH CENTERS

Since the first Library Research Center was established at Illinois in 1961, the idea has caught on and a number of other schools have created similar divisions. The purposes may vary. At Illinois, the focus is on applied research dealing with specific problems of public, state, and other types of libraries, operating under grants received from such sources as the U. S. Office of Education, state libraries, and institutions of higher education. At California, the emphasis has been on the special problems of the University of California libraries on their nine campuses.

The research center concept has several distinct virtues. It helps the library profession to resolve problems on which research is needed--and it is an accepted fact that too little genuine research has been done on library matters. The center stimulates research and publication in the school where it is located and may be used to advantage in the training of doctoral candidates and other advanced students. A strong center will require its own full-time director and staff, but may also draw upon faculty members and students for assistance.

A research study investigating the programs and methods of operation of existing library research centers would be of value to the profession.

Faculty Research

One of the most difficult aspects of library school administration is to persuade the average faculty member to engage in research and writing. The usual plea is lack of time because of heavy loads of teaching and committee work. On the surface it would appear that a library school instructor has more time, incentive, and opportunity for making contributions to the literature of the profession than does a practicing librarian. Also, it is generally agreed that teaching and research are complementary, each strengthening the other.

If a faculty member has any interest in or aptitude for research, he may be stimulated in any one of several ways: (1) he may be given a sabbatical leave from time to time for a specific research project; (2) a lightened teaching assignment for a semester or a year may enable him to begin and perhaps to complete a study or investigation; (3) if a reduced teaching load is not practicable, more teaching assistance and clerical help may provide free time for extra-curricular labors; (4) a grant from the university, a foundation, or a government agency will eliminate financial handicaps, covering the expense of such items as research assistance and travel; (5) the end usually aimed for in research is publication and the school administration should aid in any way possible in finding a suitable medium for the results of faculty research to be issued in published form. All these points merit further study.

Publishing

Publications emanating from library schools assume a variety of forms. One of the most valuable and at the same time one of the most demanding, because of its continuing nature, is the journal, represented by such titles as the University of Chicago's *Library Quarterly* (the oldest), Illinois' *Library Trends*, the *Drexel Library Quarterly* and Florida State's *Journal of Library History*. Lecture series may appear in print, e.g., Illinois' Windsor Lectures in Librarianship and Denver's Isabel Nichol Lectures. Institutes and conferences are frequently reported, as in Chicago's Annual Conference begun some 34 years ago, and Illinois' annual Allerton Park Institutes, the first of which was published in 1954. Substantial book series, usually appearing irregularly, are represented by Columbia's *Studies in Library Service*. More ephemeral material may be found in such enterprises as Illinois' *Occasional Papers*, founded in 1949, a processed pamphlet series on various professional subjects, coming out irregularly and reproducing manuscripts which are unsuited to printing in journals because of length, detail, or special nature.

For a successful publication program a library school needs to make certain that it is properly nurtured and cared for. Manuscripts meriting publication may have to be sought to keep the program active, unless it has a natural source of supply, such as an institute or lecture series, and even these ought to be planned in the first place with eventual publication in mind. Editorial staff and space will be essential for any program of considerable scope.

Research studies on the nature and quality of library school publications, need for publications in areas not now adequately covered, and problems of overlapping would be of value.

FINANCES

Due to the impact of various federal programs the income and expenditures of library schools have increased substantially during the past few years. Grants for fellowships and scholarships, for special educational and training programs, for conferences and institutes, for research projects, and for the purchase of materials have been generous.

The most recent figures reported found that in the fall of 1967 the incomes of the accredited library schools of the United States and Canada ranged from a high of $870,000 to a low of $112,000, with a mean of $358,299. Frank L. Schick (1969) concludes:

> An examination of individual budgets indicates the basic problem of library education in the U.S.--there are too many schools insufficiently funded to offer meaningful programs. Estimates have been made that graduate programs require annual budgets of about $200,000.
>
> Research in problems of library school financing could profitably look into such matters as sources of funds for various types of activities, additional prospects for support, basic budgets, and student aid.

SUMMARY

Practically every aspect of library school administration has developed more or less pragmatically, unsupported by objective research. Unquestionably current practices could be improved and library education strengthened by unbiased research studies to test the validity of many widely-held concepts in such matters as administrative organization, physical facilities, faculty recruitment, student admissions and placement, curriculum, research programs, and financial support.

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CHAPTER VII

RESEARCH NEEDS RELATING TO LIBRARY SCHOOL FACULTY AND STUDENTS

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ABSTRACT

Although much has been written in library literature on students and faculties in library schools, relatively little research has been done in the area. Of the studies available, from the Williamson Report in 1923 to the most recent, certain problem areas recur. Faculty problems relate to those factors given some emphasis in accreditation standards: academic background, library and teaching experience, publication record and professional activities. More recently, stress has been placed on the quality of teaching, which is perhaps due to articulate and demanding students.

Studies relating to students revolve around the recruitment, selection and retention of qualified students, the relationship of certain factors in admission standards, such as grade point average, to success in the field, and the role of library experience in library education. Related problems are the part time students and faculty, and, more urgently, minority group members.

Solutions to these problems seem to lie in a better knowledge of what constitutes faculties and student bodies today; what types of services and personnel are needed for the library of the future; and what factors are most important in the selection of both students and faculty. Several studies designed to provide this data base are recommended.

PROBLEM DEFINITION

Of the many factors that contribute to the total picture of library education, perhaps none are more vital than faculty and students. Danton, in his comments on "The Library Educator" at the 1948 University of Chicago Library Conference, stated:

> The accomplishments of American libraries--their service to democracy, to education, to learning, to human progress, and hence the respect and prestige they are given in their communities--will be precisely as great as two things: the quality of students which American library schools educate and the quality of the faculties that teach those students.

In order to be effective both must be of high quality. A top-notch faculty with a mediocre group of students is not only wasted but contributing adversely to the profession by sending such graduates into it; a group of superior students with a poor faculty, on the other hand, can only be frustrated, uninspired and cynical. One rarely finds, however, that faculties or students are wholly poor or superior; like all other groups, they most often have some of both kinds.

Faculties and students, being components of the university complex, cannot be studied in a vacuum. Their effectiveness in their roles must be studied in relation to the overall academic policy of the institution, the needs of the library profession, the responsibility to the profession and of the profession to society. The situation in both the university and the profession today, as indeed in the world itself, is one of such rapid change that it is difficult to ascertain what roles faculty and student should play in order to effect needed improvement in library education.

One aspect of this change is the emphasis on the human person as a focus of primary concern. Librarianship, along with other professions, has felt the impact of this concern in educating its members. Henderson (1969) points out

> Engineers are becoming sensitive to the influence of technology in solving the problems of human beings. Architects have been shifting from concepts of city planning that are physical in nature to environmental design which takes account of the human problems. . . . law schools,

> dissatisfied with graduating lawyers to serve affluent clients, are endeavoring to reorient their students toward the solution of human problems wherever they exist. Even the schools of business administration today use a "behavioral" approach to the study of administrative processes, a marked departure from their earlier emphasis on "scientific" management.

Library educators have perhaps to some extent been prodded to this reorientation by various student groups within the university. Recently Library school students themselves have formed groups demanding change. This type of group was brought before the profession quite dramatically during the 1969 ALA Conference when the Congress for Change presented its demands.

Probably for the first time the student group will have some part in the shaping of library education for the future. It is not enough, however, that everyone in the academic community have a part in this; there must be a research base on which to draw for the decisions that must be made.

It is the purpose of this paper, therefore, to present the problems relating to students and faculties in library schools as shown in the literature, to offer some possible solutions and alternatives to these problems and make some specific recommendations for needed research.

HISTORICAL REVIEW

Although some of the studies relating to library school faculties have also treated the student problem, others concentrate on one or the other. For this reason, it might be well to trace studies relating to faculty first and then those relating to students.

Faculty

The earliest and probably most frequently cited study on librarianship is the Williamson Report of 1923. Interestingly enough, some of the criticisms regarding library school faculty by Williamson have been reiterated in almost every study since that time. Finding only 52% of the faculty members with college degrees, few full-time faculty, many with inadequate experience, and extremely low salaries, he recommended that every effort be made "to raise the quality of instruction in the schools by increasing salaries and making teaching positions more attractive in various ways to trained and experienced librarians of the highest quality."

Wheeler, in his 1946 Progress and Problems in Education for Librarianship, found the faculty situation greatly improved, due largely to increased salaries and the number of M.A.'s and Ph.D.'s that had provided recruits to the teaching staffs of library schools.

Danton, in the same year, however, was not so optimistic. In his study of 148 full-time faculty members, 50 had no higher degree than the B. A. or B. S., almost twice as many as had the Ph.D. While Danton recognized that faculties had improved over those of 1923 study, he pointed out that they were "still far from being as good as they should be. Relatively speaking, they have not kept pace with the higher standards of academic preparation which have come to be required generally for college and university faculties." He further noted that of the 34 who held the rank of full professor, only 11 were not also the dean or director of the school. Although the financial burden was somewhat relieved by this practice, Danton felt that the schools suffered because of this dual responsibility of their directors. He recommended that more professors and associate professors be appointed in order to make it possible for the schools to attract highly trained and experienced librarians into teaching. Another recommendation was that the ALA seek funds for the endowment of four or five chairs or "superprofessorships" which would make it financially possible for that number of schools to secure almost any librarian in the country for their faculties, thus increasing prestige of library education, and, hopefully, attracting other well-qualified librarians.

One of the Public Library Inquiry volumes, Bryan's (1952) The Public Librarian, included a fairly extensive investigation of library school faculties by Robert Leigh. In comparing his data, collected for the 1948-49 academic year, with that of Williamson in 1921 and Wilson in 1937, Leigh found that salary averages, academic training and status, working conditions, opportunities for travel and study, provisions for security, although still inadequate, showed steady improvement over the years. In comparing library school faculties with faculties of other professional schools, however, the library schools fell below average on most factors.

In regard to academic background, Leigh noted the improvement over that of the Wilson study, but added that the Ph.D. could not be the criterion for the well-qualified library educator as he felt Wilson seemed to imply. A faculty of Ph.D.'s with no practical experience could be as disastrous for the training of future librarians as "the early library school faculties of practitioners teaching the tricks of their trade in their spare time."

What Leigh's study pointed out most emphatically was the great disparity among the faculties of the library schools. This is understandable in view of the fact that accredited schools included three types--from undergraduate programs in teachers' colleges to advanced programs in universities. He did not hesitate to condemn "inherent weakness resulting from smallness, a weakness which cannot be cured by any amount of valiant professional effort." His recommendation that faculties be large enough to represent the several academic disciplines with reasonable specializations and expertness--five or more members at least--was well taken. When the 1951 standards came out, most of the Type III or smaller schools were dropped from the list of accredited schools.

At an institute for library school administrators held in Washington in 1965, Morton summarized the changing picture of library school faculties since the publication of the 1951 *Standards for Accreditation* in which the standards regarding faculties became less quantitative and more qualitative. She pointed out that the problem of the part-time faculty was even more acute than in 1951, partly due to the increase in the number of part-time students in most library schools. Adequacy in number of faculty members was still not reached by the majority of schools although the educational level of the faculties was considerably strengthened. The problem of professional growth of faculty members was touched upon also. The acute shortages of well-qualified personnel for library school teaching, however, seem to militate against the formal study made possible through sabbaticals and faculty leaves.

In a critique of the Morton paper, Dearing, president of the State University of New York, Binghamton, also pleaded for full-time faculty adequate in number. He cited "the necessity of interaction and stimulation which is prerequisite to research productivity and the vitality and excitement and validity in teaching which is thought to be inextricably related." Although he used 12 as a minimum number in an example, he hastened to add that it was not a magic number. One might question, however, whether this kind of interaction is possible in faculties of four, five or six members.

While the discussion of faculty adequacy in education and experience, research and professional activities still goes on, the emphasis in the literature whithin the recent past seems to be more on the faculty member as a person and as a teacher, admittedly more difficult in assessment.

Rothstein (1966) in describing the ideal faculty member, in fact, places teaching ability at the head of the list--at least from the point of view of a library school director.

In Bone's (1968) Library Education: an International Survey both Coughlin and Dunkin in their chapters raise the question of what makes a faculty member a good teacher. Dunkin, in suggesting his "Gadfly Method," describes the teacher as a person who ". . . can confront his student with questions which demand skeptical imagination," whose questions challenge the status quo, who constantly questions himself and what he really believes. For Dunkin the teacher must have style, i.e. he must use the English language with skill--even slang, if it helps; and he must be a zealot, i.e. he "must show that he is himself caught up in the question he asks." The doctorate and experience are also important but even more in his "in-service training," meaning "creative and probing research."

Coughlin emphasized the need for some training in teaching. She asked, "Why should librarians labor and experiment with large classes and a variety of teaching methods on a hit-or-miss basis only to discover what a professional teacher has known for years?" She discusses programs to improve college teaching in the U. S. in the past several years that have some relevance for library education programs.

Carnovsky , in the same volume and also in an earlier article in the Drexel Library Quarterly (1967), relates faculty qualifications to accreditation standards. He points out that the Ph.D., faculty research, publication record, and professional activities do not necessarily reflect good teaching. He suggests that "background and the ability to communicate and stimulate may be far more important in library schools and perhaps should be the criteria for appointment and promotion." Accrediting teams, he adds, will probably find these qualities very difficult to measure and there will always be an element of subjective judgment in this area of the evaluation.

More recently, the students and alumni have studied the library school faculty with a critical eye. Typical of such studies are the ones by Donaldson and Harvey (1966) who reviewed evaluations of faculty from Drexel students over a five-year period and Randall (1968) who surveyed the students at the University of California, Los Angeles, during the spring quarter of 1968. In general, both groups rated such factors as "knowledge of the subject," and "spirit of helpfulness" high but "stimulation of thought" and encouragement of independent thinking" low. It seems likely that students in the future will not only have a part in faculty evaluation but may take part in the selection process also. The fact that the student group is represented at faculty meetings in some library schools today seems to point in that direction.

Students

If library school faculties have come under scrutiny so, too, have the students. Many of the studies referred to above include sections on library school students or graduates. The early studies sponsored by the Carnegie corporation--those of Williamson (1923), Munn (1936), and Wheeler (1946)--touched on the student problem but only incidentally. Their comments centered mainly on recruitment, entrance tests and field work, but no attempt was made to study specific groups of students.

One of the earliest research studies was Wilson's (1937) "preprofessional backgrounds of Students in Library School" in which 808 students who completed work in 1926-27 and 1935-36 at the University of Illinois were studied. Findings indicated that students with library experience tended to achieve slightly higher degrees of success than those without experience. Other factors, however, such as undergraduate grades, amount of preparation in languages, type of college attended, and undergraduate major had little effect on library school achievement.

A second was Howe's (1940) study of the University of Denver's graduates from 1932-38. The composite picture of the library school student, drawn from these two studies is described by Howe as

> an unmarried woman of 27 years of age, white, of American parentage. She is a graduate of an endowed college or university, where she made a "B" scholastic record, majored in English, and studied French and Latin, and probably German. She has had four years of library experience since college graduation . . .

The description is probably typical of the average library school student of the '30's.

A similar study was carried on by Danton and Merritt (1951) describing the University of California graduates from its first class in 1920 through the class of 1948. The study icluded data on age, sex, education, job satisfaction, professional activity and other pertinent variables. They found that older students did slightly better than younger colleagues scholastically; that ". . . while the correlation between entering grade point average and school grade point average is positive, it is not sufficiently high to make too strong a point of requiring exceptionally good scholarship among applicants" and that ". . . there is no appreciable correlation between high scholarship and success in the profession as measured in terms of salary . . ."

Douglass (1957), taking students of about the same period, 1947-48, studied the extent to which the library profession selects members exhibiting characteristics generally ascribed to librarians: extreme deference, submissiveness, and respect for authority. His conclusions were that the profession does tend to be selective in that direction. Traits which appeared to characterize the students in the seventeen library schools included in the study were: conscientious, orderly, responsive, conservative, undominating, interested in people but not merely gregarious, and "not neurotically anxious".

Leigh also examined the student population but limited his sample to the academic year of 1948-49, covering enrollment figures in various types of programs, geographical distribution and costs, library experience, and admission requirements. Trends at this time indicated that techniques formerly required for library school were now made prerequisites; the college degree, "formerly the sure ticket of admission to the library school" was now being challenged as a wholly adequate basis for admission; what had previously been only a classroom in the academic library where classes were taught by the library staff was in many places turning into professional schools of graduate caliber with full-time staff. Leigh did not gather data on personal qualifications, intellectual capabilities, or work experience of individual groups of students: his data were gathered from catalogs, announcements and other types of records.

Some studies attempted to discover factors that influence the choice of librarianship as a career. Reagan (1957), who did the most comprehensive study of this type, limited it to factors in institutions of higher education, the relative importance of these factors and the way in which they operated to influence college students to become librarians. She found five major factors responsible for influencing students: individuals, publicity, use of libraries, work experience in libraries, and library education, in that order.

McCreedy (1963) investigated factors influencing persons to select school librarianship as a career. The most influential factors indicated by the 2,154 librarians and library school students in her sample were "enjoyment of books," "liking for people," and "desire for intellectually stimulating work." Not surprisingly, the majority of the respondents had been exposed to good school libraries in their own education.

Another type of study attempted to relate types of positions or library work to professional preparation. In 1960 Rockwood studied "The Relationship between the Professional Preparation and Subsequent Types of Library Positions Held by a Selected Group of Library School Graduates." Data were obtained from records at Florida State University Library School and questionnaires sent to graduates. Responses from 251 graduates showed some relationship between elective courses in library school and present position but not between undergraduate majors and positions. The author maintained that the findings justified the specialized rather than general approach to library education at Florida State University.

Bailie (1961) studied job success as it related to certain admission variables such as grade point average, Graduate Record Examination scores, and the California Psychological Inventory scores for 94 graduates of the University of Denver. Results indicated that undergraduate grade point average and Graduate Record Examination scores correlated highly with success in library school; the correlation between success in library school and job success, however, was not so high.

A more recent similar type of study was McCrossan's (1966) "Library Science Education and Its Relationship to Competence in Adult Book Selection in Public Libraries." In comparing selection choices of two groups of librarians--one, graduates of top-ranking library schools; the other, with little or no library education--McCrossan found that there were some, but relatively small, differences in the competencies and attitudes between the groups.

Other recent literature on students, with the exception of a few follow-up type studies such as Parr's "Characteristics of Successful Alumni" (1966) and "Whatever Happened to the Class of 1962?" tend to concentrate on certain aspects of the student problem.

Goldstein (1967), for example, edited a volume of papers presented at the University of Illinois Library Conference devoted entirely to evaluation of students. Such areas as essay and objective tests, course evaluation, grading principles and other methods for evaluation were covered. The two most valuable sections of the book for the purposes of this paper are Simpson's "Developing Student Self-evaluation," in which the author points out the advantages of student self-evaluation over usual teacher monopoly of evaluation, e.g., the work is likely to become more purposeful to the student and there are more opportunities for developing individual initiative and responsibility; and Boaz's "Library School Practices in Student Evaluation" which, in addition to describing present practices, gives examples of innovative practices in student evaluation.

Another specialized study was that of Harmon (1967) who analyzed research problem sensitivity among library school students at the University of Denver. Students were asked to assess 33 research problem statements on a specially constructed scale. Findings indicated that problem-sensitive students were on the average older, had attended more prominent undergraduate institutions and had majored in problem-oriented disciplines.

Clayton (1968) studied personality characteristics of a group of library school students who planned to be academic librarians. Students in this group were found to have lower mean scores than a composite of 14 other occupations on all but the Femininity Scale. Also, 26% had profiles that were indicative of personality difficulties.

The most recent overall picture of the library school student was given by Shores in 1967. It is characterized by an older student, mentally, chronologically, and experimentally; a higher percentage of men than ever before; a marked difference in students from metropolitan areas and from campus communities; an increase in foreign and minority group students; a greater number of part-time students and those in trainee programs. Most library school faculty would agree with Shores' comment: "Whatever the library school student has seen in the past there are unmistakable signs in the present that his profile will be quite different in the future."

SUMMARY AND EVALUATION OF THE HISTORICAL RECORD

The literature on both faculty and students is replete with opinion type articles. Everyone, it seems, has an opinion on how to cope with faculty and student problems in the library schools. Most of the opinions, understandably, are not based on research since, in fact, there have been relatively few real research studies in either of these areas. From those available, however, and the many opinion articles, certain problems and trends emerge.

Regarding faculty, most of the studies from Williamson to the present have been descriptive, i.e., those delineating characteristics of library school faculties, particularly academic background, previous library and teaching experience, publication record and professional activities. This is understandable in the light of accreditation standards which placed high priority on these factors. Quality of teaching, a factor which has long been discussed, has not been studied to any great extent because of the inherent difficulty in ascertaining what effective teaching is and how it can be measured. In more recent literature, however, greater emphasis has been placed on this factor, and there is a shift from the merely descriptive and/or quantitative enumeration to the study of causal relationships.

One problem that has been recurrent in the literature from the beginning is the role of the part-time faculty. Has the pressure for more and more qualified faculty forced administrators to employ part-time instructors as a stopgap measure, or is there a significant role for him in library education?

Much has been written on the difficulty of obtaining good faculty but little has been written on the recruitment of faculty. Recent literature on the fellowship programs has touched on this, since one of the primary purposes of the funds was to recruit candidates for teaching, but research has yet to investigate the effectiveness of such programs.

Another area that has recurred frequently in the literature is that of faculty benefits and what would be termed today "faculty rights." In many studies faculties were compared to other faculties within the university with regard to status and privileges. In earlier studies, as with other emerging professions, library educators did not always fare so well. Today, however, library educators take their place with other members of the academic community and share in their benefits. This does not seem to be a problem except perhaps the question of how some of the privileges, such as sabbaticals, benefit the library school or profession. What is more likely to raise questions is the role of the faculty member in student dissent. Almost every university is fraught with some dissenting students and the library educator, along with other faculty members, cannot remain aloof from this aspect of campus life if important issues are involved.

Finally, there is the problem of leadership in the profession. One might reasonably expect this to come from the faculties of the library schools, but generally this has not been true. Long (1965), in summarizing the need for this leadership, pleaded for philosophical ideas which would generate research and initiate action based on the findings of the research. She maintained that through ". . . this very proper emphasis on educators . . . will be bred the leaders who will solve the problems of education for librarianship and inspire their students to solve the problems of the rest of the library world."

The literature on students in many ways parallels that on faculty. Earlier studies concentrated heavily on describing characteristics of those in the library schools, i.e. number; educational background, with special emphasis on undergraduate major and test scores; and graduate school preformance. Studies in the '50's and '60's began to relate these to such factors as job success, ability to do research, special abilities on the job, and personality questions.

Recruitment of students has been a long standing problem, but with the exception of the Reagan and McCreedy studies, little has been done at the research level on this important area. The evaluation of program and faculty has emerged in the more recent literature. Another problem, the role of the part-time student, although frequently mentioned in the literature, is no more defined than the role of the part-time faculty member; nor is the related problem of library experience as an indicator of success in either library school or the profession.

In addition to the literature about the student, there is more recently a fair amount of writing by the student. More and more, as in other fields, the student is becoming vocal concerning his role in determining the kind of program he is pursuing in library school and the vital issues in the profession. The library school student, to an even greater extent than the faculty member, finds himself in the midst of protest and dissent. His concern is not only for his own professional life but with the larger concerns of the world that most students today are caught up in.

One other area that needs to be gleaned from the literature is that of the recruitment, selection and retention of minority group students and faculty. Much appears concerning library service to minority groups and the training necessary to work effectively with these groups, but little has been written on the problem of bringing minority group members into the profession. Librarianship seems to lag behind other professions in this area, but it must begin to take steps toward its part in the solution to this national problem.

In summary, the literature regarding students and faculty most frequently revolves around the question of which factors are most important in determining effective recruitment, selection, performance and evaluation of high quality faculty and students. In order to answer this question, however, the profession has to know what kind of person it wants in the field today and what different kinds of jobs might this person have from librarians in the past.

TENTATIVE SOLUTIONS

What are the tentative solutions to the problems posed: recruitment, the selection process, a better knowledge of attitudes and goals, the relationship between academic performance and job success, and evaluation methods?

Students

The recruiting problem can be attacked in various ways: reliance on career days, recruitment programs of national, state or local library associations, publicity, and other such means. What has been less often attempted is the seeking out of applicants with particular competencies. This is closely tied to the selection process. A school can apply any of the time-honored methods of entrance requirements, e.g., the grade point average, Graduate Record Examination or other general test scores, interviews, recommendations, any combination of these, or perhaps a special test suitable for library school applicants such as the Medical College Admissions Test given to pre-medical students.

Underlying the general problems of recruitment and selection is the specialized area applicable to minority groups. Library schools are faced with maintaining admission standards and perhaps thereby excluding these students, or lowering standards, as has been done in some fields, and risk further failure. Another alternative might be setting up some specially designed program for pre-library school preparation.

In regard to job success, library schools must make their own decisions on how best to educate their students for positions in the professional world. Studies sometimes offer conflicting solutions as to what are the best indicators of job success. And the question of what constitutes job success needs to be reconsidered also. What might have been considered a "successful" job by library school graduates five or ten years ago might be spurned by them today.

For evaluation methods, library schools have several alternatives--course exams, comprehensive exams, grades, or any of the other methods geared to traditional methods of teaching. Innovative teaching, which is under way in at least some library schools today, would seem to call for other evaluative methods. Some alternatives that might be employed are self-evaluation, group evaluation, a non-graded system.

Faculty

To solve the faculty recruitment problem, which is certainly one of the most acute in the library profession, administrators and committees have recruited from other institutions; from among promising doctoral candidates, especially those in their own institutions if there is a doctoral program; from the field, especially administrators and specialists; and from among outstanding retired librarians.

The selection of faculty is usually based on those factors related to accreditation--doctoral degree, library experience, publication record and good teaching record. In the absence of one or the other of these, administrators must often take the alternatives of an applicant with a doctoral degree but little or no library experience, or a good teaching and library experience record but only the master's degree.

Faculty evaluation, closely related to the same factors, generally follows university policy for purposes of advancement, in rank, tenure, sabbatical leaves, etc. Although good teaching is included in this overall evaluation, it is difficult to assess in most cases. A recent trend is student evaluation of faculty; it could hardly be considered an alternative to the traditional methods, but it undoubtedly must be considered.

A number of peripheral problems cut across these major ones, e.g., the part-time faculty member and student, the foreign student, the doctoral student, the handicapped student. Library schools, in the absence of research data, have the alternatives of accepting some of these applicants with certain risks involved, or accepting them only under certain specified conditions, or of not accepting them at all.

The impact most of these solutions would have on existing programs would probably be very little. The solutions offered in most cases are those which administrators have been using for some time. Since most studies of faculty and student have generally been for one geographical area or even one school, or one facet of a larger problem, they did not always provide the research needed to select from alternatives.

RESEARCH NEEDS

The two areas covered in this paper are very much in need of research on a national level somewhat similar to that of the Public Library Inquiry. The greatest need in library education today is for well-qualified faculty. In order to make progress toward fulfilling this need, a complete and thorough study of faculty in all its aspects is necessary, or perhaps several studies each taking some aspect of faculty background. From these data, hopefully, new solutions can be found to old problems. Such a study would include data on recruitment and selection of faculty, the relative importance of research and publication, the role of the specialist and/or part-time faculty member, and perhaps most important, what factors contribute most to excellence in teaching.

A similar type of study is necessary for data needed on students. Included would be such factors as how and from where students are recruited; what their educational backgrounds are; what kinds of work experience have they had, library or otherwise; what their goals are; what attitudes they brought with them to library school and whether these were changed or redirected during the time they spent in graduate education. In addition to these two major descriptive studies, some correlative and/or experimental studies would be needed to discover more causal-type relationships, as for example, which methods or techniques are most supportive in guiding new faculty members or doctoral candidates who are teaching assistants; which personality traits in library school students are most indicative of creativity and leadership; or which factors are most important in recruiting minority group students.

SPECIFIC RESEARCH PROPOSALS

The following are proposals for research projects relating to library science faculties and students:

1. A Survey of Library School Faculty
2. Characteristics of Library School Students
3. Factors Influencing the Recruitment, Selection and Retention of Minority Group Students
4. Factors Influencing Choice of Librarianship as a Career

5. The Relationship between Admission Standards for Library School and Academic Success

6. The Relationship between Faculty Backgrounds and Successful Teaching

7. Student Attitudes and Goals

8. Preprofessional Library Experience and Its Relationship to Academic Success and Job Success

9. Student Involvement in Policy-Making Decisions in Library School

10. The Use of Attitude and Personality Tests to Predict Academic Success and Job Success

The major studies (Nos. 1 and 2) would necessitate research staffs of from five to ten persons--perhaps one group could do both studies--with a project director of doctoral or postdoctoral level. The completed studies would probably take approximately two years. (The Council on Social Work Education conducted a similar type study of the faculties of 72 Schools of Social Work and it was completed in this length of time.) The cost of these studies would be extremely difficult to estimate as it would depend on what group were conducting the research. It would seem to be less costly if they were conducted by the research institutes of one of the library schools.

The other studies could probably be done by doctoral students under competent direction. Projects 7 and 10, however, would have to be investigated by someone with a good background in psychology and probably under the direction of a psychologist. Costs would vary but most could probably be completed at costs ranging from $10,000 - $20,000.

It is possible that much of the work on the faculty study will be completed in two studies now in process: one, on the occupation of the teacher of librarianship by Vincent Aceto of State University of New York, Albany; and the other, a study for the Manpower Project at the University of Maryland, by Rodney White.

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PART II SECTION C: THE BROADER COMMUNITY

CHAPTER VIII

RESEARCH NEEDS IN AREAS INVOLVING THE RELATIONS OF PROFESSIONAL ASSOCIATIONS TO LIBRARY SCHOOLS AND LIBRARIES

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ABSTRACT

The paper was limited to four broad areas that involve the relationships of professional library organizations to library schools and libraries in matters relating to library education. The areas were general relationships of the associations to schools and libraries and to each other; recruitment; standards and accreditation; and certification. After a review of the literature to identify problems in these areas, the following suggestions for research were made: (1) Study to determine the degree of duplication and coordination in the programs and activities of the several professional associations or units concerned with education for librarianship and related fields; (2) Construction of an adequate sample of libraries and a valid survey instrument to be used to determine personnel needs in libraries; (3) Critical evaluation of the recruiting literature and techniques of the various library associations in relation to a realistic assessment of library manpower requirements; (4) Study of the effectiveness of different kinds of recruiting appeals on different types of potential recruits; (5) Study to determine the differences, if any, in the effects on professional education of different organizational structures for accreditation; (6) Cost study of accreditation; (7) Study to determine the extent to which quantitative data are an index to the quality of a school; (8) Study of the applicability of certification practices of other professions to the library field.

PROBLEM DEFINITIONS

In this paper on research needs in areas involving the relationships of professional library organizations to library schools and libraries, two general limitations should be made clear. In the first place, the paper deals only with research needs in areas where the professional association is very much involved; it is not concerned with research into relationships that are for the most part between the schools and the libraries and where an association's involvement, if any at all, is likely to be minor. A second limitation holds the paper to a consideration of needed research in areas that relate directly to library education. For this reason, no attempt is made to delineate research problems growing out of an association's broader programs which, although they may include the concerns of library education, are not focused upon these concerns primarily.

Given these two general limitations, several broad areas that involve the relationships of professional associations to library schools and libraries were identified. Identification was aided by two recent surveys of associational activities and concerns in the field of library education (Reed, 1967; Lancour, 1968), and by a review of some of the major critiques and proposals dealing with library education, from the Williamson report in 1923 through the Asheim "Position Paper" in 1968. In addition to the broad area covering general relationships (not only of the associations to the library schools and libraries, but of the associations to each other), three other areas in which professional organizations have been thought to have a particular responsibility were selected: recruitment; standards and accreditation; and certification. To pinpoint current opinion and suggestions, selected references from the literature of the 1960's were also reviewed. While the four areas by no means exhaust the possibilities, they appear not only to have been, but also to be, of central concern to the profession and to contain a number of problems on which research at this time would be useful.

HISTORICAL REVIEW

Major Critiques and Proposals, 1923-1966

Williamson (1923) had less to say about the responsibility of professional associations for recruitment than for accreditation and certification. He did emphasize, however, that recruiting is a responsibility of the total profession and that the library schools had theretofore been doing more than their share of it. On matters of accreditation and certification, he was much more explicit. Once Williamson had distinguished between professional and clerical work and the type of training required for each, he went on to stress the necessity for standards for professional education and means for their enforcement, and to urge both accreditation of library schools and certification of librarians. To implement his recommendations, he proposed a national certification board, then under consideration by the American Library Association (ALA), which would inaugurate a voluntary system of national certification and at the same time formulate standards for library schools. Although Williamson noted that the ALA was not in the strict sense of the word a professional association, there was no question as to his preference for the ALA over the Association of American Library Schools (AALS) as the accrediting body for library schools. According to Williamson's assessment of the AALS at that time, "motives of self-interest and personal relationships" would hinder enforcement of standards by that body (p. 121).

By the time of Munn's report for the Carnegie Corporation in 1936, the ALA Board of Education for Librarianship (BEL) had been in operation for more than ten years, a program for the accreditation of library schools has been initiated, the 1933 standards developed by the Board, and there was an oversupply of librarians. The report included a list of studies and projects which the BEL felt were desirable, and among them was an "organized effort to secure the adoption of certification for libraries" (p. 29).

Ten years later when Wheeler and Danton published their critiques of education for librarianship, the situation had changed considerably. There was a severe shortage of librarians, the 1933 standards were no longer considered adequate, and library education was being subjected to critical and careful examination. Wheeler (1946), reporting to the Carnegie Corporation, was frank in stating criticisms of the BEL--it had accredited weak schools and in recent years, in part because of wartime restrictions, had not exerted the needed leadership. Although Wheeler felt that the functions of the AALS and its relationship to the BEL needed to be clarified, he also felt that the Association had a definite role to play and that its activities need not duplicate those of the Board. Wheeler saw the ALA Professional Training Round Table, a third group concerned with library education and the forerunner of the present Library Education Division (LED), as essentially a layman's organization which should function as "suggester, critic, forum, and balance wheel" (p. 93). In short, he saw a need for each of the three groups but felt that they should work more closely together.

In discussing recruitment, Wheeler emphasized that libraries, not library schools, should be the primary recruiting agencies, and he charged both the AALS and the BEL with certain responsibilities in this area. As for certification, Wheeler evidenced some concern as to whether a proper distinction would be made in employment of four-year and five-year graduates, and noted that state certification plans would have to be worked out to provide for both groups.

In proposing three levels of library service and the education required for each, Danton (1946), called on the BEL and the AALS to work together for the implementation of the proposal. He felt that accreditation must be much stricter and that the BEL "must carry a big stick and be prepared to use it" (p.28). He also suggested that it should be possible to state minimums for such items as budget, number of faculty, and teaching load, below which a school would not be acceptable for accreditation. For accreditation to be really effective he was convinced that there must also be national certification and, like Williamson, urged the establishment of a national certification board.

In 1948 the Council of National Library Associations (CNLA), sponsored a conference in Princeton to discuss issues in library education (Lancour, 1949). In attendance were librarians and library educators, many of whom were active members of the various organizations interested in education for librarianship including such specialized associations as the Special Libraries Association (SLA) and the Medical Library Association (MLA). Among the issues occupying a prominent place on the agenda were those that are the concern of the present paper: professional organizations and library education; accreditation; recruitment; and certification. The group concluded that there was a great deal of duplicated effort and activity in the several organizational units concerned with library education. They decided against the formation of another organization to represent the interests of all national library associations and recommended instead an informal joint committee with the framework of an existing organization for exchange of information between the library schools and the several associations. Special encouragement was given to the CNLA to establish such a committee.

The Conference recognized recruitment as a responsibility of the profession at large and went on record in support of the work of the Joint Committee on Library Work as a Career, recently established by the ALA and made up of representatives of the several associations. In its discussion of certification, the group was mainly concerned with how persons completing only an undergraduate core curriculum in librarianship would fit into existing certification plans.

When it came to accreditation, Conference participants agreed that it was necessary, that it should be done by a single agency, and that the BEL was the logical body to carry on the profession's accreditation program. Delegates active in the specialized associations disclaimed any wish on the part of their organizations to act as an accrediting agency. The group adopted unanimously a recommendation "that the Board of Education for Librarianship serve as the official accrediting body for library educational institutions of all types and at all levels, and that it take into consideration the interests of specialized library groups by adding suitable consultants to its membership" (p. 35).

In 1952 the personnel volume of the Public Library Inquiry (Bryan, 1952) spoke directly to the relationship between accreditation on the one hand and certification and classification on the other: "Accreditation of professional library school programs is of no value in setting a minimum standard of education for the profession unless it is tied to a system of compulsory certification and scientific classification of professional positions" (p. 447). Accreditation of five-year programs was seen as the responsibility of the ALA, compulsory certification of professionals as state-administered.

Two years later when Leigh (1954) suggested solutions to major problems in the education of librarians he concluded that the BEL was the appropriate agency for the accreditation of graduate programs, while the American Association of Colleges for Teacher Education should be responsible for applying the undergraduate standards through accreditation. The importance of certification in any overall program of library education was emphasized, but its administration was believed to rest at the state rather than at the national level.

By 1[illegible]2 when Western Reserve University and the U. S. Office of Education sponsored an Institute on the Future of Library Education (Schick and Warncke, 1962), the present Standards for Accreditation had been in effect for some ten years, the ALA Committee on Accreditation (COA) had replaced the BEL with many of the latter's responsibilities taken over by other units of the Association, and library education was re-examining itself in light of the needs of libraries of the future. The group that met by invitation at Western Reserve was made up of both library educators and practicing librarians from the several types of libraries. Of the more than fifty suggestions and proposals that came from the Institute a number are pertinent to this paper, including the need for research related to accreditation standards at all levels, and consideration of "a system of nationwide standards for the certification of librarians" (p. 59). A major recommendation approved by the total group pressed the ALA to "recognize more fully its responsibility to library education by increasing its administrative support of the Library Education Division and the Committee on Accreditation" and to seek whatever funds might be necessary for the development of a national plan for library education (p. 59). A final recommendation suggested that the AALS be involved actively in the study and implementation of the Institute's recommendations.

In line with the recommendations of the Institute, the ALA established later in that same year the Commission on a National Plan for Library Education. Composed of some sixty-five members representative of the various national library associations, library schools, fields of librarianship, and other fields concerned with information services, the Commission in its 1964 report (Report, 1967) identified what were seen as the critical problems in education for librarianship and related fields and those to which the profession should address itself. To carry out the work, the Commission recommended that the ALA seek funds to establish "an office or center for research and experimentation in library education and personnel administration" (p. 420). The report also urged that the SLA, the American Documentation Institute (now the American Society for Information Science, ASIS), the AALS, and the Joint Committee on Library Education of the CNLA be represented on an advisory board or involved in some other way in the center's development.

By 1968 when the Asheim "Position Paper" (ALA Bulletin, 1968) was published, the recommendations from the Western Reserve Institute and from the Commission's report had been partially implemented. Funds had been made available for an enlarged ALA program in library education and related fields and the ALA Office for Library Education (OLE) had been established. Asheim suggested that the proposals contained in the paper might have implications for accreditation which in the future might require a separate agency and increased financial support. The proposition that the standards for accreditation should be qualitative was reaffirmed, as was the involvement of the profession as a whole in their review and evaluation.

Selected References from the Recent Literature

The recent literature has produced a fair number of articles and papers relating to professional associations and library education, and to associational responsibility for recruitment, accreditation, and certification. From the articles available, several of the most pertinent have been selected for brief review.

In an appraisal of the two membership organizations which are devoted to library education--the AALS and the LED--Hintz (1967) concluded that although both had done some useful things, neither had been able to exert any very strong leadership. He suggested that a merger of the two groups within the framework of the ALA might result in a more effective unit (1). Such a merger does not appear likely, at least in the immediate future, since a recent survey (Rothstein, 1969) of AALS membership opinion found that a great majority wanted an expansion of the Association's activities and a broadening of its membership base.

In two articles published in 1967, Hunt discussed the obligation of associations to recruitment and spoke of the difficulties of evaluating the results of a specific recruiting program. Two years later the Congress for Change (1969), in presenting demands to the ALA, urged an increase in the number of recruits from minority groups, stated that to young people librarianship is not a "relevant profession," and directed the Association to review and revise its recruiting policies (p. 936).

Articles by Carnovsky (1965, 1967), Stallman (1967), and Asheim (Library Quarterly, 1968), all of whom had served as members of the COA, described the ALA's accreditation policies and practices, noted some of the problems involved in the evaluation procedure, and suggested a number of questions related to standards and review procedures on which research would be useful. Galvin (1969) raised questions about the need for accreditation, the suitability of the ALA to conduct it, the use of library educators, and the appropriateness of a single group exercising both regulatory and advisory functions. In the same year Bundy (1969) proposed formation of a Council of Library and Information Work Education composed of educators in librarianship and information science and whose accreditation committee would include representatives of the several professional groups, such as ALA, ASIS, and SLA. A suggested alternative to the Council was the AALS, provided its membership could be made sufficiently inclusive. Charging that accreditation procedures and standards are not relevant to present-day needs, the Congress for Change (1969) asked that the ALA relinquish accreditation to the AALS which "would in turn invite students and new professionals to take part in the writing of new standards and participate fully on all future accreditation teams" (p. 933).

Three articles dealing with certification complete this review of the literature. Two of these (Libbey, 1967; Proctor, 1967) discuss the experience of one library association--the MLA--with a program of certification. The third (Wight, 1961) is a proposal for certification of library school graduates by the ALA or the AALS after a period of experience in an approved library. It is suggested that specialist certificates be based upon examination by a panel of experts in the particular specialization.

SUMMARY AND EVALUATION OF THE HISTORICAL RECORD

The purpose of the preceding section was not to describe, or even to identify, activities and programs that individual associations are carrying on in the field of library education. Its purpose was simply to take a few of the problems that involve the relationships of professional associations to library schools and libraries, and to see how these programs have been looked at over a period of time by different individuals and different groups.

From that part of the review that touches on the general responsibilities, programs, and relationships of the associations, two general observations can be made. First of all, the number of associations with interests in library education and with units devoted to it has been increasing as specializations have developed and as new groups have been formed. In 1923 Williamson was concerned only with the ALA and the AALS; twenty-five years later at the Princeton Conference eight groups operating at the national level were listed as having an involvement in library education; more recently, as librarianship has broadened its base, associations in such cognate fields as information science and audio-visual instruction have related interests. To the national associations can be added the state and regional oganizations, as well as certain international groups, a number of which have library education committees. As the number increases, the relationships of the various units, both to the library schools and libraries, are bound to be more complex.

Secondly, although attempts have been made at closer communication and some coordination of effort, these do not seem to have been as successful as their initiators had hoped. It is probably safe to say that the following statement from the report of the 1948 Princeton Conference is still a fairly accurate assessment of the situation: ". . . There is a discernible overlapping of interests, a failure to achieve purposes and to fulfill needs, duplication of activity, and to a not-inconsiderable exent a confusion as to which agency is charged with what responsibilities" (Lancour, 1949, p. 8).

The second area of concern, recruitment, which was first viewed as primarily the responsibility of the schools has come to be considered a responsibility of the profession at large. The profession's organized efforts at recruitment are carried out through the several associations which provide literature, scholarships, and overall coordination and direction of activities. From the reaction of the ALA membership at the Kansas City Conference to a proposed cut in the budget for ALA's Office for Recruitment, it appears that for one association at least recruitment will continue as a major responsibility.

There is an indication in the record that the recruiting literature and techniques used by the associations may need to be looked at with a critical eye. As the statement from the Congress for Change suggests, the appeals that have been thought effective in the past may be less so today with some of the groups the profession is attempting to reach. Also, if there are to be several career ladders in libraries, as the Asheim paper (ALA Bulletin, 1968) proposes, persons with different kinds of qualifications will have to be sought for each of the ladders and the career expectations for those on each ladder made clear.

Over the years the profession's accrediting agency has received its share of criticism. Sometimes it has been thought to be too strict and at other times not strict enough. On the other hand, it has been criticized for exercising too much authority, and on the other for failing to exert strong leadership. Questions have been raised at one time or another about the standards, the accreditation procedures, and the organizational structure of accrediting.

Criticism of accreditation, as well as interest in it, has been stronger during certain periods than others. When libraries and library service, and consequently education for librarianship, are undergoing substantial change, then standards and procedures for accreditation are likely to be questioned for their adequacy. The present seems to be one of these times, and several alternatives to accreditation by the ALA have been proposed. Up to now whenever the question has arisen, the decision has been to leave accreditation in the hands of the ALA and to strengthen the unit responsible for it. This does not seem to have been done in opposition to the wishes of either the library schools or the other professional associations. How the present situation will be resolved remains to be seen.

The historical review makes clear the close relationship between accreditation and certification. The effectiveness of either can depend to a large extent upon the other. Although the proponents of certification would agree on the desirability of a fairly uniform system throughout the country, they have not always agreed on how it should be administered. Some have urged a national system of certification administered by the profession itself through its national organization; others have felt that the responsibility belongs to the states with some standardization of requirements.

Whenever more than one level of personnel is discussed, certification is usually mentioned. If the proposal by Asheim (ALA Bulletin, 1968) of five levels of work in libraries is accepted by the profession, it seems reasonable to think that the question of certification will receive even more attention in the next few years.

TENTATIVE SOLUTIONS AND EFFECTS ON LIBRARY EDUCATION

If the record can be trusted, then in the area of library education the relationships of library organizations to each other and to the library schools could be more productive and useful than they presently are. An evaluation of the programs and activities of the various associations should provide a basis for judgment as to how each of the several groupps can contribute most effectively to the improvement of library education. If from such an evaluation changes were to be indicated, they might include dissolution or combination of certain units, redefinition of responsibilities, coordination of activities by an existing agency, or formation of a new coordinating body. Hopefully the suggested changes, whatever they might be, would result in meeting needs that are not presently met, in reduced duplication of effort, in more effective utilization of staff and membership talent, and in improved relations between library schools and libraries.

As was pointed out above, the effectiveness of the recruiting programs of library associations has been questioned. To improve these programs, much more needs to be known about the appeals that would be most likely to be effective with particular groups of people. Also, any critical assessment of associational recruitment literature and techniques would be assisted by more precise information than is presently available as to what the personnel needs of libraries actually are. Not nearly enough is known about the profession's personnel requirements--in numbers of people of different kinds, at the professional and supportive levels, in metropolitan and more sparsely populated areas of the country. If this type of information were available recruiting appeals could be based on something a little more than the need for a specified, but often unqualified, number of "librarians." The data might show, for example, that the need is not uniform and general--that in some geographic areas the supply of librarians has caught up with the demand, that the need is much greater for recruits with certain characteristics, backgrounds, and specializations than for persons with different sets of qualifications, or that the real personnel needs are in the supportive rather than the professional ranks.

Not only would data such as these provide for a much sounder recruitment program for the profession, but they would give the recruit a much better picture of what he can expect in the way of opportunities. They should be helpful also to library schools in admissions, counseling, and placement, and might even serve as a brake or an encouragement, depending upon the particular situation, to the establishment of a new school.

What are the alternatives for the organizational structure of accreditation? The several professional fields provide a number of possible patterns. Responsibility may be lodged in the general professional association, as it now is in librarianship; in an association of professional schools or educators, such as the AALS; in a joint committee established by two associations; in a council arrangement under which the various organizations in the field have official representation. In librarianship, the nearest equivalent to the last named at the present time is the CNLA. Other possibilities include the separate agency with its own staff which was mentioned by Asheim. The question of which of these structures may be most appropriate for librarianship is still to be explored, as is the most feasible method of financing accrediting, a matter that is closely related to structure.

A question frequently asked about accreditation standards is the extent to which they should be either qualitative or quantitative. The present Standards for Accreditation are entirely qualitative, yet the suggestion has been made that it should be possible to establish definite minimums for certain items, below which a school would not be accredited. If this were done and the figures were applied, the result might be both good and bad. With something very definite to work toward, schools below standard might work all the harder to bring themselves up, but having reached the minimum might be tempted to relax their efforts.

If nationwide certification of library personnel at the various levels is determined desirable, some decision will have to be reached as to how best to achieve it. Some of the possibilities were suggested in the literature review--certification in the hands of the states; a system administered by a national association; licensing of library specialists, such as medical and law librarians, by a board or by the several special library associations. Additional alternatives may very well be found in other professional fields.

If a suitable model could be found for the library field, then its implementation might very well put more "teeth" into accreditation and thereby raise the standards of library education. If certification were to be withheld from graduates of unaccredited programs, then as Danton (1946) suggested, the schools offering these programs would have little choice but improve themselves or to go out of business.

RESEARCH NEEDS AND PROPOSALS

In this section the research needs and proposals that have been hinted at in the foregoing sections, and in some cases actually stated, are delineated in somewhat more detail. While some of the proposed studies appear to be comparatively simple to carry out, others will probably require fairly sophisticated research techniques. The suggestions are not all of equal importance, but each appears capable of contributing useful information that in the long run will work to the betterment of library education. Given adequate staff and clerical assistance, it would seem that most of the projects are subjects for individual rather than team research.

In the area of associational relationships and programs, the following study seems to be needed:

> A study to determine the degree of duplication and coordination in the programs and activities of several professional associations or units concerned with education for librarianship and related fields.

CHAPTER IX

RESEARCH NEEDS RELATING TO THE LIBRARY SCHOOL AND REQUIREMENTS FOR STAFFING LIBRARIES

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ABSTRACT

The author identifies the nature and causes of certain major manpower use problems in libraries, including: 1) confusion about roles, tasks and appropriate preparation of beginning professionals as compared with experienced subprofessionals; 2) incongruities between preparation and responsibilities at higher levels; 3) changing tasks and roles for subprofessionals accompanied by high turnover rates. She reviews selected literature in the field and relates it to specific recommendations for further research: *investigation of the appropriate role of the library school in providing basic professional training in the use of supervisory and management tools; exploration of the extent to which job responsibilities and education are matched in beginning professional placements; exploration of the library school's responsibility and role in the development of tools and the training of librarians for in-service training responsibilities*. Emphasis is on the librarian as supervisor, or manager and on the beginning and working librarian rather than the administrator.

My assignment is to identify some major current library personnel problems, to suggest some of the research needed to evaluate and improve the effectiveness of current manpower utilization, and to specify the abilities and resources necessary for carrying out such research. I take "effectiveness" to include, in libraries as in other organizations, efficient division of labor and the successful initial and continuous matching of persons with tasks and responsibility within an appropriate structure of authority, responsibility and control. The measurement of efficiency, success, and appropriateness is related not only to the nature and function of the library as an institution, but also to the specific goals of types of libraries and, indeed, of individual libraries. Thus the fact that librarians work in school, academic, public, and special libraries of widely differing size and scope raises what is to me a major question. Is it any longer possible to identify a common core of knowledge and technique which will adequately equip candidates for professional positions in all types of libraries? The present assumption that it is possible complicates each of the problems I shall try to identify.

None of these problems will be unique to the field of librarianship, and none of them will be new except insofar as the context in which they occur has changed. The fact that they are neither new nor unique suggests their complexity and should warn us against expecting easy approaches to solutions. I shall be generalizing to a very risky degree on the basis of my own experience, the advice of colleagues, and questions and concerns expressed in library literature.

PROBLEM DEFINITIONS

Problem I:

We are perplexed by a situation in which there is confusion and ambiguity about the roles, and tasks, and consequently the educational preparation appropriate for librarians as related to that appropriate for other staff categories, especially as between beginning librarians and experienced subprofessional staff members.

Problem II:

Rapid increases in the size and complexity of libraries and library systems, in the application of automated technology to library procedures and in the size and scope of the bibliographical universe have placed demands on experienced working librarians for new skills (including but not confined to planning, cost and production control, personnel, systems analysis, and academic subject specialization in many disciplines). Since these skills are not usually taught in the graduate library curricula, unless they are gained in some other way, there is a troubling incongruity between preparation and responsibility.

Problem III:

New applications in technology, larger libraries and library systems and the development of new forms of library cooperation and interdependence (e.g., the centralization of processing activities) are also creating changing tasks and roles for subprofessional employees whose rate of turnover is likely to be high and whose background and training are both varied and limited. The more effective use of librarians depends heavily on the ability of subprofessionals to support them at higher levels of responsibility and competence. Therefore the development of skill in training and training methods is of immediate concern to librarians.

Not only are none of these problems new; they are so basic that they have been argued about in library literaure for at least fifty years. The survey that follows makes no pretense of being exhaustive, intensive or evaluative. It does not cover literature outside the field of librarianship. It does attempt to focus attention or relevant recent research on comment and, where appropriate, to provide a historical frame of reference.

LITERATURE SURVEY - LIBRARY MANPOWER

Supply and Demand

Manpower Needs

Although in attempting to forecast 1970 professional library vacancies Drennan and Reed (1967) labored under the usual handicap of fragmentary and non-comparable information they produced a useful synthesis of available statistical information. By relating vacancy projections to information on staff composition by age, to the ALA Standards for School Library Programs, and to the output of both accredited and unaccredited library schools, they identified both school and public libraries as possible crisis areas in the 1970's. Drennan and Reed depended heavily upon the basic Drennan and Darling study of school and public library manpower published in 1966 and conducted as part of the Postcensal Study of professional and technical manpower.

Characteristics of the Work Force

From the manpower utilization point of view Drennan and Darling's median age data (which indicates that by 1975 roughly half of the public and school librarians in 1960 will have to be replaced) in conjunction with the information about the tasks done by librarians is noteworthy. Among public librarians 78.4 percent indicated supervision as the most frequently conducted activity while 41 percent listed it as the most time consuming. Among school librarians 59.2 percent listed supervision as an activity while 21.2 percent listed it as most time consuming. In both settings supervision seems a statistically significant aspect of the librarian's role. Are replacements being appropriately prepared for it?

On the other hand, record keeping (which should be suspect as a professional activity) is reported as a most frequently conducted activity by 71.2 percent of the public and 77.7 percent of the school librarians and as most time consuming by 14.3 percent of public and 17.9 percent of school librarians. Are professional replacements now being recruited for semi or subprofessional jobs thus perpetuating a costly misuse of personnel?

Schiller's (1968) findings on librarian roles and responsibilities in college and university libraries reinforce Drennan's data on the importance of supervision among the librarian's tasks. Of her respondents 50 percent supervise from one to five, and 25 percent supervise more than five employees. One out of every seven academic librarians is a head librarian, and 25 percent of these work in very small libraries with a maximum of two staff members under them. The tremendous spread of size of institution is reflected in the fact that 35 percent of all academic librarians work in 50 institutions.

A relevant characteristic of academic librarians documented by Schiller and not covered by Drennan's data is what she refers to as the "enormous variety" of job activities carried on. Fifty-three percent of her respondents cited non-library specializations as their primary activity (including subject fields, geographical areas, specialized materials, foreign languages, and "other"--budget control, systems, analysis, personnel work, etc.)

Schiller also tried to gauge the degree of satisfaction with librarianship as a career, finding 11 percent actively dissatisfied primarily because of the lack of stimulating "professional?" work and a desire for more decision-making responsibility. Since this questions was asked in terms of expectations, it's possible that low levels of expectation kept the dissatisfaction ratio from being higher.

Salaries

Frarey's annual 1968/69 Library Journal placement and salary survey of ALA accredited library schools presents an approximate picture of what new graduates of accredited library schools were offered in base salaries for the working conditions which they elected to accept. He emphasized the consistency of the situation over time: a continuing shortage of graduates as compared to reported openings, a gradual 4 percent increase in salary level but no change in librarians' salaries as compared with other professionals. Frarey's figures indicate a gradual and perhaps important change in the choice pattern. School and special library categories, although fluctuating over the years, have remained relatively stable, while there has been a steady gradual trade-off between public and academic choices. By 1968, 51 percent of the current graduates were entering college and university or special libraries as compared with 44 percent in 1951-55. A continuation of this trend could have significant implications for professional library education.

The implications of current library manpower studies have been spelled out by Ginsburg (1967) who attempted to place the major problems (lack of systematic relationship beteen education received and work assignment; dependence upon local manpower; high proportion of women; relatively advanced age of incumbents; low salaries; need for specialization; suborganizational nature of libraries; variation in size and mission) into the larger context of the labor market (heavy competition for persons and dollars; increased demand for service related to population increase; higher incomes; new federal programs). Within this context he suggests that actual shortages are no worse for librarianship than for other professions. He points out, however, that since high turnover is characteristic of fields with a majority of women workers, it will be essential to develop much stronger in-service training programs no matter ...how much progress is made in strengthening formal library education programs.

EDUCATION AND TRAINING - FUNCTIONS AND TASKS

Education and Training

Looking Backward

Since the early days, library educators have been deeply concerned about what Ginsburg described as the loose linkages between educational preparation, work assignments, and required competence. Williamson (1923) insisted on the necessity for differentiating between clerical and professional work as a basis for efficient library operation and for planning professional education. He insisted on the bachelor's degree, symbol of a liberal education, as a prerequisite for professional education, recognized the need for specialization beyone the first graduate year, and paid particular attention to the proper and systematic training of clerical workers.

Twenty years later Danton (1946) still saw lack of such differentiation as a major obstacle to the development of a professional curriculum and added to it the increasing difficulty of training for school, college, public, and special librarianship in one year. He identified three levels of library work and training: a) subprofessional (last year of junior college); b) a middle service for beginning librarians (4 year bachelor's degree); c) upper service for the administrative or subject specialist (one semester of fundamental techniques plus one year of specialization by type of library and type of work).

Reece (1949) gathered information from all types of libraries to guide library schools in determining the future curriculum, focussing attention not on what libraries do, but upon "offices that fall properly within their purview but have not been assumed sufficiently or at all." He identified these roughly as: a more significant and aggressive role in systematic education; in the support of scholarship and research, and in the provision of informal education and recreation. Among the skills needed but identified as lacking among librarians were: expertness in analysis, capacity for research, and the ability to see the library enterprise in its broadest context. Knowledge so identified included administrative science, theories and nature of research, sociology and psychology. Reece's respondents showed strong interest in establishment of the traditional library school program in an undergraduate year or years, thus reinforcing Danton's proposals. Moreover Reece himself emphasized the necessity for administrative tools such as personnel policies and classification plans which would differentiate between levels of preparation needed before a multi-level educational system could be successful.

Looking Ahead

Asheim's (1968) position paper on *Education and Manpower for Librarianship* represents the profession's latest attempt to synthesize and integrate library education and training for all levels of library work. It makes explicit two important assumptions: that the library occupation is broader than the library profession; and that the library profession is responsible for the establishement and maintenance of educational norms for library work at all levels. It proposes five occupational levels corresponding to five educational levels: clerical-high school, business schools or commercial course, technical assistance-junior college degree or equivalent, preprofessional-library assistance--4 year B.A. or equivalent; librarian--M.A. in librarianship; professional specialization--education beyond the M.A. Here for the first time the librarian's preparation is seen not as a one year graduate program added to whatever undergraduate preparation he brings with him, but as a five or more year program of general and special education.

In the official Criteria For Programs to Prepare Library Technical Assistants (1969), the ALA Library Education Division took a first step in recognizing overall responsibility for the library occupation. The criteria distinguished between Library Technical Assistants and other supporting staff categories, defining their work, describing the abilities required, and listing the duties and responsibilities to be assigned to this classification. Although, as the criteria state, identification of tasks assigned to Library Technical Assistants has been helped by modern management practices and mechanization of library operations, the key definitions of such work are still in negative terms. (Library assistants to *not* do "tasks which require a full *professional* knowledge of librarianship...) There is still a great variety of opinion as to what library positions actually require such knowledge. There is still suspicion, borne out by some of the evidence in studies already cited, that librarians are, on the one hand, doing the work of technical assistants for which they are over-prepared or, on the other, that of professional specialists for which they are under-prepared.

FUNCTIONS AND TASKS: THE LIBRARY OCCUPATION

General

Now in progress under the directorship of Robert Case, the School Library Manpower Project is an ambitious attempt by the AALS in cooperation with the NEA to plan a training and education program on the basis of specific and detailed information about the tasks, roles, and functions performed by school library personnel at all levels. Recommendations for the content of future training programs will be based on in-depth analysis of tasks done in a broad sample of the most outstanding school library programs across the country. They will then be tested in six experimental instructional programs. The methods as well as the results of this study should be studied closely for their usefulness in other library settings.

The Librarian

In another ambitious and comprehensive study the University of Maryland School of Librarianship and Information Science research team is identifying manpower requirements and exploring the educational preparation and utilization of manpower in the library and information professions. Frankly focussed on the future, the Maryland Project considers change a positive value and increased professionalization a major instrument in producing it. Studies are designed to: 1) contrast and compare traditional and innovative libraries and information organizations; 2) understand the change administrator as distinguished from the non-change administrator; 3) identify personality characteristics associated with the choice of a career in innovating organizations in the field; 4) study professional education in terms of its contribution to the shifting requirements of practice.

Hall (1968) investigated the relationship between the critical knowledges, skills, and abilities needed in public service activities in large public libraries in relation to the preparation given in ALA accredited library schools. Her respondents, like Reece's, placed a high priority on complex intellectual skills and abilities--comprehension, application, analysis, synthesis--and on knowledge in psychology, human relations, sociology, education, and management. Her study indicated that while most factual knowledge related to librarianship was thought to be adequately taught in library schools, the development of the higher intellectual skills was neglected as were principles and theories of related subject areas. Presumably Hall's respondents felt underprepared for their responsibilities.

Librarian or Technician: The Twilight Zone

In a recent study of matched pairs of reference librarians in seven medium-sized Middle Western public libraries Bunge (1967) tried to provide objective data on the relationship between library education and effectiveness in answering reference questions. He hypothesized that professionally trained librarians would be able to answer more questions correctly within a given time than untrained staff members; and that the difference would be related to the librarian's use of a more systematic reference technique. He found that: although professionally educated librarians as a group produced accurate answers more quickly, their superiority did not seem to be related to use of a more systematic reference technique; non-professionals can answer a broad range of factual type reference questions successfully; their ability to do so was improved by in-service training; the use of non-professionals in answering reference questions was wide spread and favored by administrators.

McCrossan (1967) undertook a similar investigation of the relationship between library science education and competence in adult book selection in small public libraries. Like Bunge, he found a significant but not large difference in favor of the library school graduate. He suggests that it would be particularly important to try to discover under what circumstances "blurring between library school graduates and experience and in-service or other training leads to insignificant differences."

A survey by Rosenthal (1969) of the specific tasks assigned to non-professionals in five university libraries throughout the country indicates that increasing use is being made of them in simple original cataloging (a blurred area) and that administrators look forward to an extension of such assignments. He points out that all of the institutions studied have relatively sophisticated personnel programs and classification systems and a relatively high degree of work specialization and that they share higher turnover rates. He emphasizes the crucial importance of training (whether in-service or academic) to the successful transference of marginal work.

Training Methods

The management literature on training and staff development in public service and industry is voluminous, and the Training and Development Handbook (1967) summarizes advanced theory and method in the field. Although Library literature has its share of how-to-do-it articles and pleas for more and better in-service training programs, systematic studies designed to evaluate method or measure the results of such efforts are rare. Among recent articles two are of unusual interest because they examine the effectiveness of self-administered instructional units.

At System Development Corporation, Wallace (1968) created and tested self-administered modules of instruction in System Analysis, Russian-to-English Transliteration, and Reference tools for use in on-the-job training of professional and non-professional personnel in scientific and technical libraries. Testing immediately after the course was taken established the fact that learning had taken place in all areas although the subjective opinions of the participants in one area--the system analysis tests--were preponderantly critical and negative. A significant problem encountered in field-testing was the difficulty encountered by most of the libraries in providing the time required to take the instruction and do the testing.

Another experiment with programmed learning, this time with library school students, was conducted by Walker (1968) who used control and experimental groups in the first segment of a cataloging and classification course. The control group was taught in the traditional lecture-laboratory format while the independent group used a programmed text, an index and other materials developed especially for this purpose. He concluded:

1. that learning achievement was sufficiently high to justify use of such materials;
2. that student reaction was favorable;
3. that the retention of subject matter was not significantly lower than that of the control group.

Both Wallace and Walker concluded that self-administered instructional units can be effectively used in both academic and on-the-job situations.

SUMMARY AND EVALUATION OF HISTORICAL RECORD

As this small sample indicates, the literature on the use of manpower in libraries is not systematic and cumulative, but fragmentary and suggestive. For that reason I have decided to try to summarize common themes and indicate interrelationships in connection with specific research problems rather than in a summary section.

I have tried to describe projects which would in some way relate to and hopefully build upon work that has already been done. At the same time I have consciously stayed away from topics upon which work appears to be in progress (specifically, the role and function of the administrator and the specialist now being explored in the Maryland studies). Although it was tempting to recommend comprehensive, systematic explorations of library tasks and functions (the method used in the School Library Manpower Project) in all library settings as the essential knowledge base from which to start in any direction, I concluded that smaller, less time consuming, more focussed inquiries could be useful. My suggestions reflect my own conviction that the appropriate training and placement of beginning librarians is of major importance for effective manpower use as is exploration of the extent to which librarians must be educated not only as librarians, but as supervisors, managers, and trainers.

RESEARCH NEEDS AND PROPOSALS

Investigation of the Role of the Library School in Providing Basic Training in the Use of Supervisory and Management Tools

Problem Statement

Supervision and management are statistically significant aspects of professional work in all types and sizes of libraries (Drennan, Schiller). Proposals for the increasing use of library technicians place heavy emphasis on the role of librarians in supervision and direction (Asheim). The rapid growth of the "system concept" particularly in the public library fields is increasing the size of library units and consequently emphasizing the need for the management skills of planning, coordination, and control. There is a large and somewhat controversial body of literature on principles, tools, and methods of supervision and management. Many librarians feel that their training in the field has been inadequate. For these reasons the provision of better basic education is still an urgent problem of librarianship.

Alternative Approaches to Provision of Supervisory and Management Training

A. On the job training.

B. Graduate courses in library schools.

C. Graduate courses outside of library schools (Business Administration, Public Administration, etc.).

D. Undergraduate preparation.

E. Self-study, experience or a combination of the two.

Information Needed

A. Nature of typical supervisory and management tasks assigned (first five years).

B. Effect of library size, type, and function on the nature of typical tasks assigned.

C. Specific management and supervisory principles, tools, and skills appropriate for these tasks.

D. Extent to which respondents have received training in these principles, tasks, and skills.

1. From on the job training.
2. From graduate courses in library school.
3. From graduate courses in other disciplines.
4. From undergraduate study.
5. From self-study (including professional workshops, reading, experience).

Answers to these questions would enable the profession to identify the management and supervisory principles, tools and skills most useful to the working librarian; to compare the effectiveness of present formal and informal sources of such training; to develop library school course content more closely related to reality. Further they would provide library administrators with a basis for justifying, developing or improving on-the-job and staff development training programs. They would provide the profession with a sounder basis for focussing institutes and workshops in these areas. Finally, they might well enable schools, the profession, and library or municipal administrators to work together in given localities to integrate and improve available training opportunities.

Method and Sponsorship

The study should be directed by a qualified researcher with appropriate background in management and librarianship. The method used could combine questionnaires covering a wide population base with intensive interviewing of sample populations to check responses against reality. Graduate students might be used in interviewing. Sponsorship should be broad, including library administrators, educators, and representatives of all types of library.

Use should be made of studies already completed or under way. In this case determination of the population base for the questionnaires and of the interviewing samples might be tied in with the Schiller Study, the Maryland studies, and the Case School Library Study.

Exploration of the Extent to Which Job Responsibilities and Education are Matched at the Beginning Professional Level

Problem Statement

Throughout the literature on librarianship there has been continuing concern about the placement of library school graduates in basically subprofessional positions where there is little opportunity to make use of professional preparation. Graduate library schools have recognized a growing need for more sophisticated, theoretical, and specialized educational programs but have been frustrated in meeting it by the library administrator's demands for vocational competence (Williamson, Danton, Harlow, 1966). If responsibility for vocational competence could be shifted downward responsibly, the graduate curriculum might include areas now felt to be neglected (Reece, Hall).

Asheim's position paper on Educational and Manpower for Librarianship and the recent Guidelines for the Education of Library Technicians have theoretically defined the duties and responsibilities of border-line positions which could be filled by candidates with less than graduate library education. Junior College programs for the training of library technicians are developing rapidly (Boelke, 1968). The next several years will see a large number of incumbents of retirement age replaced (Drennan). Under these circumstances it seems important to test theory against reality--to determine whether fifth year graduates are, in fact, taking beginning positions whose duties could be performed by library technicians. If that is the case it is equally important to explore the reasons for such placements and to develop alternative ways to remedy the situation.

Information needed

Before alternatives could be developed the facts would have to be established over a three or four year period. Needed would be:

1. Standardized information about the level of duties and responsibilities and the salary range for beginning openings for librarians.

2. The name, location, size and type of the recruiting institution.

3. The number and location of positions whose responsibilities and duties appear to fall substantially within the Library Assistant or Library Technician specifications.

If the number of such openings were significant step four could be omitted. We would have at that point, however, much better information than we now do on beginning professional openings by location, size and type of library. If the number of border-line positions were significant, the data would produce important information about the market for library technicians; moreover it would:

1. Identify areas where training programs should be encouraged.

2. Provide a factual basis for their justification.

3. Identify locations in which, although training facilities existed, administrators are not using them.

4. Encourage administrators to re-assess the allocation of duties and responsibilities as between librarians and support staff.

Method and Sponsorship

Such a project would seem to fall within the scope of both the Library Education Division and the Library Administration Division and could be a logical follow-up to the work of the Interdivisional Ad Hoc Committee on the subprofessional or technician class of library employees. It would also supplement the annual Library Journal study of beginning placements. Data gathering problems would include:

1. Identification of recruiting institutions. This could be approached in a variety of ways--through sampling of libraries by type, size, and location; or through lists of recruiting institutions obtained from accredited library schools.

2. Development of a standard position reporting form designed to produce information which could be related to the Library Technician Specifications. This might well be done under the supervision of the Office of Library Education, possibly by members of the former Interdivisional Ad Hoc Committee.

3. The obtaining of a high enough ratio of position descriptions to produce a valid sample. Since such reporting would require some effort on the part of library administrators, cooperation would need to be solicited actively. I think that many administrators would recognize the value of either negative or positive results as a way of testing their own practice.

4. If results were positive, the information about reasons for recruiting at the professional level would require a follow-up either in the form of questionnaires or interviews, which could be developed and conducted by advanced students interested in administration.

POSTSCRIPT

Exploration of the Role of Graduate Library School in the Development of Tools and the Education of Librarians for In-Service Training Responsibilities

I have tried for two months, and failed, to define a research project in this area. Nevertheless I am impelled to add here a plea for special attention to the state of the art of in-service training in libraries and to ways in which it could be improved.

Every study cited in this paper of the ability of subprofessionals to perform marginal tasks in "blurred areas" whether in public service, technical processes, or acquisitions stresses the determining influence of the quality of in-service training available. Moreover libraries now, like other institutions, have a growing responsibility for recruiting, placing, and training job applicants from educationally disadvantaged groups.

In business, industry, and education, staff development and training techniques and tools, including new methods for self-instruction, are becoming more sophisticated and more effective, but, so far as I know, the mounting need for training in libraries is not generally being matched by a comparable increase in the expertise needed to plan and implement successful programs. Neither individual libraries nor library systems seem equipped to cope individually with a problem that is, essentially, an educational responsibility.

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CHAPTER X

RESEARCH NEEDS IN THE FIELD OF CONTINUING EDUCATION FOR LIBRARIANS

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ABSTRACT

Although ultimate responsibility for continuing education rests with the individual, the library profession has a major, corporate responsibility to society or provide continuous opportunities easily available to all librarians for continuing professional development. The basis of criticism of the present state of continuing education of librarians is the lack of long range cooperative planning based on research of actual needs and optimal ways of meeting these needs.

The first research project proposed is a feasibility study of a national program of continuing education for librarians based on the cooperative partnership of all agencies in the profession. Other studies suggested all flow from or are part of this general plan, such as: a national survey of needs; a study of motivational factors related to continuing education; and the development of effective communication and research information exchange in library science. Four projects take particular recognition of the importance of a systems approach in the teaching-learning process, combined with the use of multi-media: (1) an evaluation of the abilities of various media in meeting continuing education needs; (2) the development of packaged programs of study; (3) the development of a model for staff development programs; and (4) a model for planning, implementation, and evaluation of institutes. Three projects designed to meet special needs of mid-career librarians are: (1) an exploratory study of the advantages of closer relationships between professors of library administration and library administrators; (2) an investigation of postgraduate internships and (3) a study of the participation of librarians in community affairs as a means of developing social responsibility and professional growth.

PROBLEM DEFINITIONS

Among other advantages, it is pointed out to potential recruits to a career in librarianship that because of the materials they handle and the people they serve, they will be continually stimulated to growth in knowledge and understanding. The new graduate is told: "Now you begin to really learn what you have been studying." Education has as its main objective, asserts John Gardner, the shifting to the individual the burden of pursuing his own education.

Although the ultimate responsibility for continuing education rests with the individual, the library profession has a corporate responsibility to society to provide opportunities easily available to all librarians who are motivated to a lifetime of learning. As knowledge in every discipline advances, the public has a right to expect librarians to advance with it and to supply the maximum information service in the most efficient manner possible. The rapidity and technical complexity of new knowledge and technological advances soon overwhelm a librarian who does not develop a continuing system of study. As it is, improvement in academic qualifications at the graduate level is often and soon negated by the actions of supervisory personnel who may have received no increments of training since graduation.

As has often been suggested, if librarians do not supply the services desired by society, it is inevitable that society will turn to other members of society for such services. There are many evidences that librarians have failed to satisfy the newly emerging user demands for information. Klempner (1968) asserts that the lack of continuing education for librarians is a major factor in contributing to this inability to meet newly emerging user demands.

Whatever the habits of lifelong learning practiced by the individual librarian, it appears that they are not adequate to this day of rapid societal and technological change. Although there have been some excellent continuing education and training programs and workshops sponsored by library schools, professional associations, and individual library systems; they have been accessible and convenient for too few and have not provided sufficiently for continuity in any given topic. Lorenz (1964) states "the effort toward systematic development of the library personnel at all levels and in all types of libraries has been insufficient, indeed." The trouble with continuing professional education, writes Rothstein (1965), is that it is a "peripheral activity within librarianship. As professional people, as librarians, especially, we owe it to ourselves and to our clientele to go on learning in a more purposeful, planned and effective way than we are now doing. If we really set store by our continuing education, let's do it properly."

Other professions have identified continuing education of their practitioners as their greatest concern. The research literature in medicine, law, education, pharmacy, engineering, business and industry, and public administration have demonstrated the need, and further research and development activities are directed toward cooperative and coordinated planning and implementing programs on national, regional and local levels.

Much has been said and implied in library literature on the need for varying kinds of formal and informal continuing education, but there is a dearth of research-based and evaluation information available. Advanced degree programs on the post-master's and doctoral levels are within the reach of a tiny percentage of the profession. Our primary concern in this paper is for the bulk of the practitioners and their professional growth and the delegation of responsibility among the various segments of the library profession to provide for this growth. Monroe (1967) has written helpfully on the responsibility of the graduate library school, the library association, and state agencies cooperatively developing state-wide plans which will focus on four chief aspects of continuing education: foundation learning, remedial learning, emergency education, and finally specialization for the experienced librarian.

If our profession is to meet its responsibilities to members, some answers must be developed to such basic questions as:

1. What are the continuing education needs of professional librarians?

2. How can these needs be analyzed, interpreted and translated into meaningful recommendations for action?

3. How and by whom will objectives be defined and priorities of effort and support be established?

4. How best capitalize on the good programs that have been offered by library schools, associations and library systems to reactivate, improve and extend their effectiveness through repetition and communication exchange?

5. What factors motivate individuals to continue their professional learning? What administrative strategies can be implemented to achieve wider participation?

6. What instructional methods and techniques at this level are most effective in achieving objectives?

7. What standards and criteria for evaluating and measuring outcomes of programs are needed? How and by whom are they to be developed?

8. How can the library profession select from, interpret and disseminate concepts and research findings from other disciplines that are relevant to the professional growth of librarians?

HISTORICAL REVIEW

A search of the literature reveals many references to the exponential growth of knowledge and the obsolescence of librarians. Although reports appear frequently on individual meetings and conferences, workshops and institutes, seminars and short courses, proceedings and evaluations are seldom available. All have in varying degrees and ways stimulated and supported continuing education, but the general effect has been sporadic, haphazard and splintered. Rarely, if ever, does librarianship appear in comparative studies of the professions and their continuing education programs. Material that does discuss the factors associated with professional growth generally has not been based on research inquiries, surveys and experimentation. Typically, it has been based on individual opinion and observation.

There has, however, been some research that has implications for continuing library education. In the area of background characteristics of various types of librarians, studies have been done by Alvarez (1939), Harvey (1957), Morrison (1969), Douglas (1957), Drennan and Darling (1966), and Schiller (1968).

In the past few years, several aspects of continuing education have been the subject of special attention, and these provide an approach to an overview of the field. One recent effort showing an increasing interest in continuing education has been the annual publication, "Continuing Education for Librarians--Conferences, Workshops, Short Courses" (Reed: 1964, 1966; ALA: 1967, 1968, 1969).

Symposia on continuing education appearing in library journals include the following. One, planned by Foster Mohrhardt for the ALA Mid-Winter Conference in 1967, feature papers presented by Houle, Kortendick, McJenkin, Monroe, and

Stevenson (ALA Bulletin: March 1967). Taken as a whole, these provide a survey of various aspects of the subject and stress the importance of continuing education to the profession, identifying various types of programs and indicating areas of need for further programs and study. Another, appearing in the January, 1967 issue of Special Libraries, includes articles by Sloane, Davis and Shank. A third covers four phases of continuing education as presented by Alvarez, Boaz, Duncan and Kennedy in the July, 1969 issue of the California Librarian.

Unresolved problems, as well as research needs, in the area of continuing education were briefly outlined in an article by Boaz in 1967. This year also brought emphasis on the manpower problems of the profession, many of which have direct implications for continuing education: (1) initiation of the Library Manpower study at the University of Maryland School of Library and Information Services by Wasserman and Bundy; (2) ALA President Gaver's program at the ALA convention in San Francisco; and (3) the Ginsberg and Brown Study from the Conservation of Human Resources Project of Columbia University which gives an in-depth analysis of educational-occupational linkages within the profession.

Asheim's widely circulated position paper, "Education and Manpower for Librarianship," (1968) emphasized the importance of continual learning for all library manpower, but especially for the "professional specialist".

The library schools' formal Post-MLS programs for continuing education as they existed in 11 accredited library schools were surveyed by Fryden (1968). On the basis of his research, he raised some pertinent and troubling questions, and concluded with the practical suggestion that other occupational groups be examined to see what they did to promote continuing education beyond the first professional degree. Currently, under the auspices of the ALA, Danton (1969) of the University of California is further analyzing sixth-year programs.

Jesse and Mitchell (1968) examined the extent of staff development opportunities available to academic librarians as revealed by questions answered by 52 research librarians. The research by Stone (1969) dealt entirely with the continuing education of librarians and specifically sought an answer to the question "What motivates and deters librarians in their participation in professional development activities?" It also identifies the activities that the librarians themselves consider the most important for their professional growth, and presents a profile showing what librarians are actually doing now in this area. The population on which the research was based was drawn from a representative sample of academic, public, school, and special librarians. Recommendations were in three main areas: to the individual librarian, to the library administrator, and to the profession at large.

Another study which deals exclusively with the area of continuing education is the Office of Education funded research project directed by Kortendick and Stone (1969, 1970) on the continuing education needs at the Post-MLS level of middle and upper-level personnel in Federal libraries. This study is based on actual on-the-job needs and on the demands of this group for both formal courses and for short-term institutes and workshops. Findings are translated into recommendations for action in the area of continuing education, and a data bank is presented which has potential value for graduate library school planning Post-MLS courses or workshops. It is found through comparison with the findings of the other studies mentioned above that the profile of Federal librarians is comparable to that of other segments of the profession in age, length of service, educational background, and job activities. Other segments of the profession, however, should be surveyed in a somewhat similar fashion in order to develop a wider base of information related to needs for continuing education.

Under a grant from the Knapp Foundation, the School Library Manpower Project (Case, 1968) is being conducted by the American Association of School Librarians on educational needs of school media center personnel, which is in some ways parallel to the study on Federal librarians. An earlier study by Woodworth (1967) examined and identified the areas needing research in school librarianship and found that 26.4% of the people in the study thought continuing education was an "absolutely essential" area for research and that 50.89% thought it was "very important."

"Recommendations for Training Media Service Personnel for Schools and Colleges" (C. W. Stone, 1964) is an excellent example of thoughtful planning of professional career paths, in the area of formal continuing education by library school. Learning program designs include identification of information to be acquired, as well as needed application, production, and research skills at the entrance level for four types of media specialists, and for 5th, 6th, and 7th year programs.

The final recommendation of the Ginsberg and Brown Report (1967), which is especially pertinent to any development in the area of continuing education, urges "that the field of librarianship broaden and deepen its knowledge about itself. There are too few facts, and the facts that are available are frequently of such questionable quality that a responsible leadership cannot formulate action programs and press for solutions. If the leaders are to lead and not be pushed by events, they must devote more time and energy to encouraging systematic research into their profession. Only with sound knowledge of the past and the present, will it be possible to formulate plans for the future."

Tentative solutions.

Because the problems on continuing education are nationwide, because continuing education is one of the most important problems facing librarianship today, because the gap between new knowledge and concepts and actual application in terms of service grows greater every year, practical methods will have to be found to meet the actual needs of individual librarians at a national level through the participation of those concerned.

The basis of criticism of the present state of continuing education of librarians is seen to be the lack of long-range cooperative planning based on research of actual needs and optimal ways of meeting these needs.

A blueprint is suggested to meet this lack which will provide for equal, coordinated educational opportunities with the ultimate goal the establishment of a national center for continuing library education.

The plan should incorporate such concepts as a research data bank, the use of systems design, the behavioral approach to learning, systematic evaluation, the use of media, and the organized distribution and dissemination of program elements.

Further, it is believed that in order to entertain any measure of success, certain criteria and standards in the development of programs will be necessary: excellence in content; opportunities for a wider choice of programs; continuity of opportunity; accessibility and convenience of opportunities.

With this in mind, the research proposals suggested here in regard to continuing education are all oriented toward action and all embrace in some phase of them a part that can be planned by the library schools.

In several of the proposed target areas, there are major elements suggested which should be carried on simultaneously, and then the findings and recommendations of each substudy suggested or added, should be synthesized in a report which should be published and widely circulated among the educators and the profession at large. A variety of research methods is suggested or implied. Although all studies should proceed from an awareness of the past, the present and the trends and prospects for the future should occupy the major amount of time, effort and cost of each project.

SPECIFIC RESEARCH PROPOSALS

A Feasibility Study of a National Program of Continuing Education for Librarians.

Objectives.

Such a study would lead to a conceptual and practical blueprint for the provision of equal, coordinated educational opportunities throughout the country for those who need, want, and will continue their lifetime postgraduate learning.

Possible items to include in this study would be:

1. Analysis of national continuing education programs being developed in other professions, profiting from their experience.
2. A study of alternative structures and operational guidelines for a national committee representative of the various interest and segments of the profession.
3. Suggest the elements that contribute to a national policy such as objectives, scope, roles of various agencies, ways and means of equalizing opportunity, etc.
4. Suggest the necessary mechanics for an information clearinghouse function in the plan.
5. Suggest the systems design to achieve coordination of activities and program.

Manpower Needs:

This study is conceived as a team project consisting of a director, a research staff, and a group of selected consultants representative of the interests and activities of the total profession, and consultants from other fields who have had experience in developing national or regional continuing education programs.

Related Studies:

Dryer (1962) for medicine; Hewitt (1965) for pharmacy; Taylor (1967) for law; the National Education Association (1964) for education; McMahon (1968) for adult education; and Dubin (1968) for engineering.

A National Survey of Continuing Education Needs of Librarians: A Study of Educational Needs, Job Dimensions, and Professional and Personal Characteristics.

There is widespread feeling that there is need for improving our manpower programs as they relate to continuing education, but that general feeling does not give a detailed understanding of the particular needs as the librarians and their supervisors see them. Some studies have been done, but with limited population groups; now it would seem important before any nationwide program is embarked on to make continuing education within easy access of every librarian, that time and resources be taken into account to see what the chief needs are on a national basis.

Objectives of the National Survey:

1. To determine the self-perceived educational needs for professional librarians.

2. To determine the job dimensions--what the librarians actually do in their jobs--for as Corson (1966) pointed out, only on the basis of a clear understanding of what professionals do in a given profession, what activities consume their time, and what responsibilities they bear, and hence what talents are required--can sound decisions be made as to kinds of programs to develop.

3. To collect data on the personal characteristics such as age, sex, marital status, geographical location, level of supervisory responsibility, years in the profession, etc., it is imperative in educational planning from a systems point of view to know the background of the students and what they bring into the course.

4. To determine attitudes of librarians toward continuing education needs as related to their job, supervision and library.

5. To recommend methods for providing continuing education programs to update librarians.

6. To provide the organization of this data so that profiles of a group of librarians in terms of a number of variables on demand may be supplied.

7. To provide a means for continual updating of this data.

Manpower Needs:

The research could be broken down into smaller segments to be carried out by Ph.D. candidates or library school professors under the coordination of a project director to assure that uniform information is obtained, which is essential if a national data bank is to be built up that will meet the needs. A programmer, statistician and consultants from each type of library service would be necessary.

Related Studies:

Corson (1966), Dubin (1968), Dryer (1962), Ginsberg (1967), the Graduate School of the Department of Agriculture Handbook (1967), Kortendick and Stone (1970), McKeachie (1965), Morrison (1969), Schiller (1968), Stone (1969), and Taylor (1967).

Motivational Factors Related to Participation in Continuing Education Activities.

This study would seek to establish the importance of the individual librarian's motivation toward continuing education and also the importance of top management showing every participation why he should undergo training and how the course content meets his training needs. Without this influence from top management, Likert (1968) points out that training may not have value, and as a matter of fact, may do more harm than good.

Objectives:

1. To find out what motivates librarians to engage in continuing education.

2. To find out what deters librarians from pursuing continuing education.

3. To establish necessary criteria important in planning for continuing education if there is to be wide participation by the librarians.

4. To discover the most effective strategies that

administrators may use in motivating the individual librarian to engage in continuing education.

5. To determine how actively and with what results the library school instills in the student the need for a lifelong program of continuing education.

6. To determine the types of continuing education activities the librarians consider most important for their professional growth.

7. To determine the degree and kind of support administrators give to their employees regarding participation in continuing education activities.

Manpower Needs:

Director with some background in social psychology and administration, with a modest supportive staff, several consultants who have done research in motivation, a statistician part-time, and a programmer part-time.

Related Studies:

Anderson (1961), Clegg (1963), Dubin (1969), Jerkedal (1967), Herzberg (1959, 1968), Stone (1969), Swanson (1965), and Taylor (1967).

Development of a Model for Continuing Education and Staff Development in Libraries.

A continuing education and staff development program set up to accomplish a number of specific objectives is composed of many elements. For such a development program to be maximally effective, all these elements must be integrated into a system, designed to accomplish the objectives at a minimum cost. Various principles and techniques of learning must be applied in the development of the system.

Objectives:

1. To develop a model which could be used by any practicing librarian responsible for continuing education or staff development for any size population or typical library and which should provide decision-making points.

2. To provide for the combination of the elements in a rational way to make up a complete system which

would not only be responsive to internal factors but to external elements outside the specific program developed, such as the attitude and motivation of those participating in the programs, the climate of the library or library system in which the program takes place, and the attitude of the administration of the given system toward continuing education and staff development.

Manpower Needs:

A professor in a library school who would direct a series of doctoral studies related to the study and be responsible for coordinating the whole.

Related Studies:

Garrison (1967), Smith (1966), Odiorne (1965), and Likert (1967).

Development of a Comprehensive Model for Managing and Evaluating Short-Term Institutes and Workshops for the Continuing Education of Librarians.

The need for a more comprehensive approach to educational planning for short-term institutes and workshops has been emphasized as projects (a) become longer and more complex, (b) call for greater allocations of money and personnel, and (c) cover a wider range of subject areas. Although short-term institutes and workshops provide one of the major avenues of continuing education available to librarians today, there are at present no models in library science that apply to every important phase of a project from its inception to its termination. Topics to be covered would be identification of sponsoring body, its qualifications for this project, stated purposes, objectives, staff, participants, program content, skill development, learning applications, validation of effects, training methods, and techniques and use of multi-media.

Objectives:

1. To analyze and evaluate library institutes and workshops to provide background material for a data base. Study would include workshops funded by Federal Legislation and those which had been locally sponsored.

2. To develop a model which could be used by (a) those who write proposals, (b) those who operate projects, (c) those who evaluate the programs. The use of such a model should result in

improvement of programs by providing specific criteria from the conception to the culmination of a project and by providing feedback data throughout.

3. To include in the model the following elements: statement of criteria for proposal development, assessment of needs, objective relevant to needs, priority considerations, staff and management, program activities and curriculum, facilities, evaluation, assurances and appraisals.

Manpower Needs:

The model would be developed by a director with consultants and supportive staff. The director or an assistant might work with the U. S. Office of Education staff and have access to relevant records in that office. The surveys of individual short-term courses could be done by one or more Ph.D. candidates.

Related Studies:

Richard Miller (1968), Garrison (Operation PEP, 1967), Merrell (1965) and Andrews (1957 and 1961).

Communication and Research Information Exchange in Library Science.

The American Psychological Association under a grant from the National Science Foundation (1963) made a two-year study on scientific information exchange in psychology and found that there were four processes that could be identified in any successful system of scientific exchange of information: the origin of information, its transmission, its user, and information conveyance devices that have both transmission and storage functions.

Objectives:

1. To identify the institutions associated with the source, the user, and the information conveyance devices that have transmission and storage functions in library science and to identify the scope of each agency in fulfilling these roles.

2. To analyze the types and categories of information exchange activities.

3. To study the persons initiating, guiding, or actively engaged in scientific research and the modes of communication they chiefly use. The

roles of formal and informal communication. Information (from questionnaires and interviews) on the individual's research and the information exchange related to his research.

4. To discover information exchange between foreign and American librarians and information scientists.

5. To determine the membership patterns in library and information science organizations and the information exchange among their members.

6. To investigate the production, distribution and use of technical reports, and the use that librarians make of these reports.

7. To ascertain the nature of the scientific products of library associations, especially the program content of convention programs.

8. To use the convention as a source of scientific and professional information. The dissemination of information at library and information science conventions and meetings.

9. To study the information exchange activities at regional, state, and local library and information science meetings.

10. To analyze the journal publication date of papers presented at library and information science meetings.

11. To study the collection, preparation, and use of scientific and professional information disseminated at a large library meeting or convention.

12. To make a study of library and information journal authors and users, and reviewers, including the evaluation of journals and journal images.

13. To determine the role of the invisible college in librarianship.

Manpower Needs:

An executive director familiar with the interdisciplinary exchange of information and also the framework and patterns of library associations and publications. The major elements could be carried on simultaneously. The findings and recommendations of each substudy should then be synthesized in a report which would be reviewed by the total staff and by a group of specialists (consultants) before publication. This complex project, it is estimated, would require at least two years and involve a large staff of research associates and assistants assigned to segments of the overall study. Computer facilities would be necessary for parts of the project. Major funding would be required and could be sought from a number of funding agencies.

Related Study:

Report of the American Psychological Association's Research on Scientific and Information Exchange.

The Development of Model Packaged Programs of Study in Selected Defined Areas Pertinent to the Needs of In-Service Librarians for Updating and Expanding their Knowledge of Advances in the Field.

Objectives:

1. To identify the topics for which need and interest have been demonstrated, e.g. concepts and use of programmed budgeting in libraries, data for planning and decision-making on such topics as automation of library processes, on library insurance programs, Marc II Tapes, etc.

2. To delineate the objectives of the unit.

3. To develop the materials and techniques of presentation best calculated to achieve the objectives.

4. To package a syllabus with a selected annotated bibliography, illustrative charts, diagrams, photographs, and depending on the topic, perhaps film strips, tapes, slides, programmed text or teaching machine program.

5. To include some form of self-evaluation in the development of the package.

6. To develop methods of effective distribution.

Manpower Needs:

An appropriate faculty member of a library school working with graduate students, educational technologist, and educator would constitute a minimum staff.

Related Studies:

Dyer (1962), Wallace (1968), and Walter (1968).

Evaluation of the Potential Capabilities of Various Media for Use in the Continuing Education of Librarians: A Feasibility Study.

Objectives:

1. To experiment with matching media to educational objectives in order to obtain optimal results.

2. To research and develop new methods and materials for continuing education of librarians.

3. To study and evaluate the capabilities of EVR (Electronic Video Recording System) for the presentation of continuing education instruction.

4. To study and to evaluate the capabilities of Talk-Back TV.

5. To study and evaluate the use of video-tape.

6. To study and evaluate the use of a telephone dial access tape recording system.

7. To study and evaluate instruction using TV fixed service.

8. To study and evaluate the use of programmed instruction, which could include programmed texts, teaching machines, and computer assisted programmed learning.

9. To study and evaluate the possible use of correspondence courses.

10. To study and evaluate the use of films and slides for use in the continuing education of librarians.

11. To analyze and synthesize the end results which would indicate in what kinds of situations and for what kinds of learning each of these major media might be most effectively used.

Manpower Needs:

A team of researchers consisting of a technology specialist, a learning spcialist, a subject specialist, and consultants would analyze and synthesize the results from the individual parallel studies.

Related Studies:

Faegre (1968), Hamreus (1967), Briggs (1967), Gagne (1965), and Ofiesh (1969).

Toward Closer Reciprocal Relationships between Library Science Professors and Practicing Library Administrators: An Exploratory Study.

Mosher (1968) emphasizes the serious threat that is inherent in the fact that there is an ever-widening gap in higher education between the professors and the administrators who make the decisions in society. He presents the hypothesis that as scholars proceed more deeply into their subject matter the problem of converting their findings and their wisdom into social policy becomes even greater and more important. In librarianship there would be many gains if professors in the graduate schools would have closer working relationships with the practicing administrators of libraries.

Objectives:

1. To determine how university resources might be developed for helping library administrators improve their effectiveness.

2. To determine the order of preference among the suggested ways in which professors of library science might best serve practicing library administrators as viewed by the administrators and as viewed by the practicing professors in library schools.

3. To determine whether the professors and the practicing administrators agree concerning the rank order of values of the ways in which professors of library science may best serve practicing administrators.

4. To determine which of the suggested ways for professors of administration to best serve practicing administrators are viewed as most helpful by the total group of professors and practicing library administrators.

5. To determine which of the ways are viewed as least helpful by the total group.

6. To determine what understanding, knowledge and skills should be emphasized in the program of

leadership development for practicing library administrators.

7. To ascertain methods the administrators would prefer and alternatives they suggest to returning to the library school for continuing education.

Manpower Needs:

Director should be a professor of library administration with supportive staff and selected library administrators as consultants.

Related Studies:

Frasure (1966) and Mosher (1968).

Postgraduate Internships and Trainee Programs in Librarianship: An Evaluation of Existing Programs and a Proposal for Development of the Internship Concept in Continuing Education for Librarians.

Few library schools, libraries and library systems have developed such programs. The internship concept has long been accepted in other professions as an integral part of professional training. It has not been considered such in librarianship. Yet it would seem to be a very significant approach to continuing education for librarians, and possibly at various levels, immediately following the Master's degree, at mid-career for those showing special potential for top-level administration; a part of the doctoral program (before, during or after).

Objectives:

1. To evaluate existing intern programs in librarianship.
2. To present the case for and against internship.
3. To construct alternate internship plans.
4. To make recommendations to the profession.

Methodology:

1. Content analysis of literature on concept of internship.
2. Survey of existing programs, history, objectives, elements of each program.

3. Development of criteria for evaluating programs.

4. Evaluation

   a. Questionnaires to those who completed program and those currently involved in it.

   b. Interviews with directors of programs.

   c. Interviews with employers.

5. Summarize results and reach conclusions.

6. Develop alternate plans based on findings.

Manpower Needs:

Director should probably be a faculty member who has taught and done some research in library administration. A programmer and statistician would probably be required for computer analysis of questionnaire and interview data. Consultants would be selected library administrators and several others with experience in planning internships and training programs.

Related Studies:

See related studies in librarianship such as Stallman (1963), Wilson (1963), Kenney (1969), Brodman (1960), and Postell (1960) and Internship reported on as Master's theses at University of Texas, for example: Ayres (1961), Bentley (1961), and M. H. Stone (1958).

A Study of Attitudes and Responses to Participation of Mid-Career Librarians in Community Affairs as Stimulators and Effectors in Continuing Professional Growth.

Library schools and library literature stress the importance of the librarian's involvement in the interests and activities of the community he serves. The hypothesis is that such involvement can lead to a deeper sense of social responsibility, a mark of the professional whose growth should be personal as well as professional. Absorption in our profession can restrain serious thought within a groove and ultimately lead to a superficiality. Social responsibility broadens a person's view of the total social system within which and for which the library makes its unique contribution.

Methodology:

The research would test the hypothesis through a series of interviews with a structured sample of mid-career librarians to determine their attitudes on social responsibility and to measure in some way its relative effect on their professional growth. Since related studies in other professions have revealed that an important factor in the amount of interest and activity given to community affairs is the example and encouragement of chief administrative offices, there is indicated a follow-up sampling of the attitudes of the bosses and their expectation and encouragement of staff to community involvement as a means of staff development toward a more enlightened and focused service.

Findings, if they follow the pattern of the other studies, may be somewhat negative, revealing conviction with little application, but at the same time will identify gaps in training to which library education programs should address themselves today.

Manpower Needs:

This project was conceived as one for an individual, preferably a library educator with special interests, experience and training in sociology and social philosophy.

Related Studies:

Several studies in related disciplines include: Mee (1968), Dillman(1961, 1962), Lazarus (1968), and Blizzard (1956).

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would not only be responsive to internal factors but to external elements outside the specific program developed, such as the attitude and motivation of those participating in the programs, the climate of the library or library system in which the program takes place, and the attitude of the administration of the given system toward continuing education and staff development.

Manpower Needs:

A professor in a library school who would direct a series of doctoral studies related to the study and be responsible for coordinating the whole.

Related Studies:

Garrison (1967), Smith (1966), Odiorne (1965), and Likert (1967).

Development of a Comprehensive Model for Managing and Evaluating Short-Term Institutes and Workshops for the Continuing Education of Librarians.

The need for a more comprehensive approach to educational planning for short-term institutes and workshops has been emphasized as projects (a) become longer and more complex, (b) call for greater allocations of money and personnel, and (c) cover a wider range of subject areas. Although short-term institutes and workshops provide one of the major avenues of continuing education available to librarians today, there are at present no models in library science that apply to every important phase of a project from its inception to its termination. Topics to be covered would be identification of sponsoring body, its qualifications for this project, stated purposes, objectives, staff, participants, program content, skill development, learning applications, validation of effects, training methods, and techniques and use of multi-media.

Objectives:

1. To analyze and evaluate library institutes and workshops to provide background material for a data base. Study would include workshops funded by Federal Legislation and those which had been locally sponsored.

2. To develop a model which could be used by (a) those who write proposals, (b) those who operate projects, (c) those who evaluate the programs. The use of such a model should result in

improvement of programs by providing specific criteria from the conception to the culmination of a project and by providing feedback data throughout.

3. To include in the model the following elements: statement of criteria for proposal development, assessment of needs, objective relevant to needs, priority considerations, staff and management, program activities and curriculum, facilities, evaluation, assurances and appraisals.

Manpower Needs:

The model would be developed by a director with consultants and supportive staff. The director or an assistant might work with the U. S. Office of Education staff and have access to relevant records in that office. The surveys of individual short-term courses could be done by one or more Ph.D. candidates.

Related Studies:

Richard Miller (1968), Garrison (Operation PEP, 1967), Merrell (1965) and Andrews (1957 and 1961).

Communication and Research Information Exchange in Library Science.

The American Psychological Association under a grant from the National Science Foundation (1963) made a two-year study on scientific information exchange in psychology and found that there were four processes that could be identified in any successful system of scientific exchange of information: the origin of information, its transmission, its user, and information conveyance devices that have both transmission and storage functions.

Objectives:

1. To identify the institutions associated with the source, the user, and the information conveyance devices that have transmission and storage functions in library science and to identify the scope of each agency in fulfilling these roles.
2. To analyze the types and categories of information exchange activities.
3. To study the persons initiating, guiding, or actively engaged in scientific research and the modes of communication they chiefly use. The

roles of formal and informal communication. Information (from questionnaires and interviews) on the individual's research and the information exchange related to his research.

4. To discover information exchange between foreign and American librarians and information scientists.

5. To determine the membership patterns in library and information science organizations and the information exchange among their members.

6. To investigate the production, distribution and use of technical reports, and the use that librarians make of these reports.

7. To ascertain the nature of the scientific products of library associations, especially the program content of convention programs.

8. To use the convention as a source of scientific and professional information. The dissemination of information at library and information science conventions and meetings.

9. To study the information exchange activities at regional, state, and local library and information science meetings.

10. To analyze the journal publication date of papers presented at library and information science meetings.

11. To study the collection, preparation, and use of scientific and professional information disseminated at a large library meeting or convention.

12. To make a study of library and information journal authors and users, and reviewers, including the evaluation of journals and journal images.

13. To determine the role of the invisible college in librarianship.

Manpower Needs:

An executive director familiar with the interdisciplinary exchange of information and also the framework and patterns of library associations and publications. The major elements could be carried on simultaneously. The findings and recommendations of each substudy should then be synthesized in a report which would be reviewed by the total staff and by a group of specialists (consultants) before publication. This complex project, it is estimated, would require at least two years and involve a large staff of research associates and assistants assigned to segments of the overall study. Computer facilities would be necessary for parts of the project. Major funding would be required and could be sought from a number of funding agencies.

Related Study:

Report of the American Psychological Association's Research on Scientific and Information Exchange.

The Development of Model Packaged Programs of Study in Selected Defined Areas Pertinent to the Needs of In-Service Librarians for Updating and Expanding their Knowledge of Advances in the Field.

Objectives:

1. To identify the topics for which need and interest have been demonstrated, e.g. concepts and use of programmed budgeting in libraries, data for planning and decision-making on such topics as automation of library processes, on library insurance programs, Marc II Tapes, etc.
2. To delineate the objectives of the unit.
3. To develop the materials and techniques of presentation best calculated to achieve the objectives.
4. To package a syllabus with a selected annotated bibliography, illustrative charts, diagrams, photographs, and depending on the topic, perhaps film strips, tapes, slides, programmed text or teaching machine program.
5. To include some form of self-evaluation in the development of the package.
6. To develop methods of effective distribution.

Manpower Needs:

An appropriate faculty member of a library school working with graduate students, educational technologist, and educator would constitute a minimum staff.

Related Studies:

Dyer (1962), Wallace (1968), and Walter (1968).

Evaluation of the Potential Capabilities of Various Media for Use in the Continuing Education of Librarians: A Feasibility Study.

Objectives:

1. To experiment with matching media to educational objectives in order to obtain optimal results.
2. To research and develop new methods and materials for continuing education of librarians.
3. To study and evaluate the capabilities of EVR (Electronic Video Recording System) for the presentation of continuing education instruction.
4. To study and to evaluate the capabilities of Talk-Back TV.
5. To study and evaluate the use of video-tape.
6. To study and evaluate the use of a telephone dial access tape recording system.
7. To study and evaluate instruction using TV fixed service.
8. To study and evaluate the use of programmed instruction, which could include programmed texts, teaching machines, and computer assisted programmed learning.
9. To study and evaluate the possible use of correspondence courses.
10. To study and evaluate the use of films and slides for use in the continuing education of librarians.
11. To analyze and synthesize the end results which would indicate in what kinds of situations and for what kinds of learning each of these major media might be most effectively used.

Manpower Needs:

A team of researchers consisting of a technology specialist, a learning spcialist, a subject specialist, and consultants would analyze and synthesize the results from the individual parallel studies.

Related Studies:

Faegre (1968), Hamreus (1967), Briggs (1967), Gagne (1965), and Ofiesh (1969).

Toward Closer Reciprocal Relationships between Library Science Professors and Practicing Library Administrators: An Exploratory Study.

Mosher (1968) emphasizes the serious threat that is inherent in the fact that there is an ever-widening gap in higher education between the professors and the administrators who make the decisions in society. He presents the hypothesis that as scholars proceed more deeply into their subject matter the problem of converting their findings and their wisdom into social policy becomes even greater and more important. In librarianship there would be many gains if professors in the graduate schools would have closer working relationships with the practicing administrators of libraries.

Objectives:

1. To determine how university resources might be developed for helping library administrators improve their effectiveness.
2. To determine the order of preference among the suggested ways in which professors of library science might best serve practicing library administrators as viewed by the administrators and as viewed by the practicing professors in library schools.
3. To determine whether the professors and the practicing administrators agree concerning the rank order of values of the ways in which professors of library science may best serve practicing administrators.
4. To determine which of the suggested ways for professors of administration to best serve practicing administrators are viewed as most helpful by the total group of professors and practicing library administrators.
5. To determine which of the ways are viewed as least helpful by the total group.
6. To determine what understanding, knowledge and skills should be emphasized in the program of

leadership development for practicing library administrators.

7. To ascertain methods the administrators would prefer and alternatives they suggest to returning to the library school for continuing education.

Manpower Needs:

Director should be a professor of library administration with supportive staff and selected library administrators as consultants.

Related Studies:

Frasure (1966) and Mosher (1968).

Postgraduate Internships and Trainee Programs in Librarianship: An Evaluation of Existing Programs and a Proposal for Development of the Internship Concept in Continuing Education for Librarians.

Few library schools, libraries and library systems have developed such programs. The internship concept has long been accepted in other professions as an integral part of professional training. It has not been considered such in librarianship. Yet it would seem to be a very significant approach to continuing education for librarians, and possibly at various levels, immediately following the Master's degree, at mid-career for those showing special potential for top-level administration; a part of the doctoral program (before, during or after).

Objectives:

1. To evaluate existing intern programs in librarianship.
2. To present the case for and against internship.
3. To construct alternate internship plans.
4. To make recommendations to the profession.

Methodology:

1. Content analysis of literature on concept of internship.
2. Survey of existing programs, history, objectives, elements of each program.

3. Development of criteria for evaluating programs.

4. Evaluation

    a. Questionnaires to those who completed program and those currently involved in it.

    b. Interviews with directors of programs.

    c. Interviews with employers.

5. Summarize results and reach conclusions.

6. Develop alternate plans based on findings.

Manpower Needs:

Director should probably be a faculty member who has taught and done some research in library administration. A programmer and statistician would probably be required for computer analysis of questionnaire and interview data. Consultants would be selected library administrators and several others with experience in planning internships and training programs.

Related Studies:

See related studies in librarianship such as Stallman (1963), Wilson (1963), Kenney (1969), Brodman (1960), and Postell (1960) and Internship reported on as Master's theses at University of Texas, for example: Ayres (1961), Bentley (1961), and M. H. Stone (1958).

A Study of Attitudes and Responses to Participation of Mid-Career Librarians in Community Affairs as Stimulators and Effectors in Continuing Professional Growth.

Library schools and library literature stress the importance of the librarian's involvement in the interests and activities of the community he serves. The hypothesis is that such involvement can lead to a deeper sense of social responsibility, a mark of the professional whose growth should be personal as well as professional. Absorption in our profession can restrain serious thought within a groove and ultimately lead to a superficiality. Social responsibility broadens a person's view of the total social system within which and for which the library makes its unique contribution.

Methodology:

The research would test the hypothesis through a series of interviews with a structured sample of mid-career librarians to determine their attitudes on social responsibility and to measure in some way its relative effect on their professional growth. Since related studies in other professions have revealed that an important factor in the amount of interest and activity given to community affairs is the example and encouragement of chief administrative offices, there is indicated a follow-up sampling of the attitudes of the bosses and their expectation and encouragement of staff to community involvement as a means of staff development toward a more enlightened and focused service.

Findings, if they follow the pattern of the other studies, may be somewhat negative, revealing conviction with little application, but at the same time will identify gaps in training to which library education programs should address themselves today.

Manpower Needs:

This project was conceived as one for an individual, preferably a library educator with special interests, experience and training in sociology and social philosophy.

Related Studies:

Several studies in related disciplines include: Mee (1968), Dillman(1961, 1962), Lazarus (1968), and Blizzard (1956).

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CHAPTER XI

RESEARCH NEEDS RELATING TO THE ROLE OF THE LIBRARY COMMUNITY

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ABSTRACT

The library school program must be geared to library service in relation to needs, regardless of the distinctive character of any community. Hence library research must inevitably be directed to the concept of library use. On the assumption that the library must accept responsibility for service to all, what can it do to discharge this responsibility? What are the implications for cost and personnel? The specific research projects suggested are:

1. Who uses the library, and for what?
2. What, if anything, can the library do to attract those who do not patronize it?
3. How effective have programs aimed at the economically and culturally deprived been? And what measures of effectiveness can be applied?
4. How good is the bookmobile in reaching adults? How effective are library branches?
5. What problems does the library encounter in serving students?
6. What are the needs of the industrial community, and to what extent can the library meet them?
7. What is the relation between kinds of books read and the background of the children who read them?
8. Are a child's attitudes shaped by his reading, and if so, in what ways?
9. How is school library use affected by the size of the book collection? By variations among the users themselves?
10. How has the library system affected library use?
11. In metropolitan areas, how much and for what is the library in the central city used by suburban residents?
12. What is the library's role in improving community race relations? What has happened as a result of

its program in this area?

13. What part can libraries play in the development of communications and information-exchange networks?

The conduct of such investigations should support library education in two ways: (a) If conducted by the library schools, the students have an invaluable opportunity for research experience. (b) If the studies lead to conclusions that might affect the direction of library development the schools have an opportunity to revise their curricula and to prepare their students for services not currently offered.

INTRODUCTION

Since the program of any library school is conditioned by the society it exists to serve, it is essential that the school be aware of the character of its community and of the changes occurring within it; otherwise the school is in danger of continuing a program which may be irrelevant at least in part, and may even be obsolete. However important its concerns with internal matters, such as student selection, faculty recruitment and assignments, placement procedures and the like, it cannot lose touch with the society outside and retain a viable program.

Whether or not all library schools can themselves maintain a comprehensive research program is problematical. Many, perhaps most, are frankly service institutions, established and operated to the end of the providing practitioners for traditionally functioning libraries. But even schools without a research orientation cannot remain immune to social changes and especially to changes which have affected the libraries themselves. Indeed, the criticism recently voiced about the irrelevance of library education, whether justified or not, stems from the accusation that schools have not sufficiently, if at all, recognized the changes in society, and therefore that their instruction is geared to an earlier day when social demands were different, when library functions appropriate to the nineteenth century no longer are; and that libraries are not ready to meet current demands because library schools have not prepared their students for this responsibility.

For present purposes it is unnecessary to respond to the accusation; whether or not it is correct, or whatever the extent to which it is applicable to all schools, the implication is clear: the library school program must be relevant to the needs of its constituency. This truism has been invoked most forcibly with respect to the public library, but it is no less applicable to the school, academic, and special library as well.

The problem as stated is really twofold: philosophical and operational, or ends and means. Is it the proper role of the public library, for example, to accept responsibility for all citizens regardless of their literacy, their interest (or lack of it) in reading or in ideas in whatever form, their capacity for comprehension? To put it in broadest terms, we know that virtually every library is used (however "use" is defined) by a minority of the community, and by a very small minority of the adults; does the library have an obligation to the majority who never come near it?

Suppose the answer is "yes"; then what? *Can* it do anything that would effectively attract the non-user, and even more important, can it do anything that will make a significant difference in the patron's life or in the community's welfare? No less important, does it have the funds for effective promotion of service to the presently unaware or disinterested? Or should funds currently available for conventional services be diverted to activities not yet undertaken? Aside from money, are personnel available to undertake experimental and unconventional programs?

Answers to these questions must be given by each library in terms of its philosophy, its community, and its financial, bibliographic, and personnel resources. At the same time, these investigations may support the library school in two ways: (a) If the investigations are conducted by the schools, the students are provided an invaluable opportunity for research experience; (b) If the studies lead to conclusions that might affect the direction of library development, the schools have an opportunity to revise their curricula and to prepare their students for services not currently offered. In this sense, at least, the schools might exert a profound influence on the direction to be taken by the library of the future.

THE LIBRARY AND ITS COMMUNITY

Though there have been numerous studies revolving around the question "who uses the library?" it is a question that can never receive a final answer. This is because communities differ so markedly from one another that the pattern revealed in one may be quite different from that in another. Not only this, but even in a single community the character of the population may change significantly from one time to another. This in itself is sufficient to justify renewed attention to the use of the library and failure to use it.

Studies of library use have been reported in a number of publications; they have been summarized (as of 1949) in Berelson's *The Library's Public* and subsequently considered by Ennis and Fryden (*Library Quarterly*, XXX, 1960, 253-65). Ennis, in his paper "The Library Consumer," (*The Public Library and the City*, 1965) probes further into the question of library use, and concludes with suggestions about appropriate programs in the light of each library's "community's needs and power structure." Library priorities, he says, cannot be the same in all cities because the cities themselves are not alike; in one, service to the business community may be stressed, especially if no "special" libraries exist to serve it; in another, the library might become "the educational and cultural auxiliary to whatever agencies are working to improve the opportunities for the deprived groups." Whatever the presumed implications for the library, there can be no doubt that community analysis should constitute an important element in library investigation.

The emphasis in community analysis has recently been placed on the so-called underprivileged--the economically insecure and the educationally deprived segments of an urban population--for whom a conventional library of books of some sophistication is largely, even completely, irrelevant. Yet on the assumption that the library has a responsibility to engage their interest and patronage, it may raise questions of their numbers and geographical distribution, levels of literacy, language ability, interest in taking advantage of library programs--and the kinds of program that would attract them--and interest in ideas generally. Such information may lead to administrative decisions of far-reaching significance, and may lead to the provision of services far removed from those once envisaged as the limits of library responsibility. The High John project of the University of Maryland is illustrative of the type of program that might be undertaken, once we know where to place it and the most useful form it might take. (See Moon, 1968.)

Yet this is only the beginning of research in this area. What happens, for example, when a special program is set up: specifically, what happens to the users of High John (and of similar programs, undertaken in many large communities)? What proportion of the patrons are new, and how large a proportion of the underprivileged residents are they? What are their satisfactions and frustrations? Can anything more, or different, be done for the underprivileged who still do not come? For those who do, what is the nature of their involvement with the library--attending lectures or movies, borrowing books (and of what kinds), using the facility as an escape from a depressing home environment--or what? These are only a few of the questions that a library might ask. The answers to many of them might well be that the community rather than the library has the responsibility to cope with the problems of the underprivileged through institutions other than the library; and that the library lacks the means to deal effectively with the problems thus presented to it.

There are other matters worth exploring, not only with respect to the underprivileged but relating to library use in general. For example, how good is the bookmobile, as a substitute for a fixed, or permanent, branch or as a means of introducing library service into areas where it was formerly not available? The word "good" immediately requires definition: good in terms of what? If *something* in place of *nothing* is accepted as "good," then no further study is necessary. But one may ask, how effective is the bookmobile in reaching adults? Is the bookmobile essentially a service to children, and does it actually repel rather than attract adults?(1) (Even the implied generalization needs qualification: reaction in one community may not be at all representative of reaction in another dominated by a different type of resident.) Questions of this kind may be raised for all types of extension outlets: how they are used, by how many, with what frequency, etc., and the answers may throw light on a realistic policy of branch establishment. If library school students were to undertake such studies they would benefit greatly not only through experience in objective measurement and in defining concepts in quantitative terms, but also from the opportunity to learn from observation, possibly through participation, how people react to library facilities conventionally provided and assumed to be altogether satisfactory. Beyond this, there might be intensive cost studies of branches and other extension outlets, not to answer the question as to whether a given service is *worth* what it costs, but to provide a realistic basis for assessing costs and thus for contributing to the budgeting process.

The study of library use by should be supplemented by studies of student use. The recent Baltimore studies (Martin, 1963) revealed clearly the impact made by the increase in school enrollments on the public library. How successful the library generally has been in accommodating the flood of students--how its experience may be related to its size, the character of the community, the quality of school libraries--are all considerations that might indicate a different role, or different methods for performing its role. Another matter that has rarely been studied is the effect of student crowds upon adult attitudes toward the library, and indeed their patronage of the institution. Do students demand so much attention that other patrons are neglected? Do they pre-empt all the seats and many of the books that adults want? Since libraries and communities differ so widely from one another, the findings in one city may not apply to others. Studies of communities that differ significantly should therefore be welcome, and library schools can perform a real service to the profession by sponsoring them. At the same time their own teaching and course content might be affected by the results. Can service to students be given more efficiently through better-equipped school libraries, accessible even when the school itself is not open? But before acting on the assumption that the answer lies in better school libraries, we would do well to determine how effectively the public library serves students, and with what handicaps, if any, to the rest of its clientele.

Though we have written of "students" and "adults" as though they were homogeneous groups, we know that this is so in only a limited sense, and their demands on the library are likely to vary as widely as human curiosity. Nevertheless it is useful to differentiate among types of demand by identifiable groups, however defined. Consider, for example, the industrial community. What are its needs, and how and what extent can the public library satisfy them? This question involves a host of other considerations, such as the definition of the industrial community, its size and character, the identification and classification of its needs that may be met through bibliographical resources, the possibility that other kinds of library or bibliographical centers may meet them, and the cost involved. As such information is made available, the library school itself may find it desirable to shape its curriculum, particularly in reference work and in information retrieval, to prepare its students more realistically, with specific population components in mind.

The industrial community has here been selected as the basis for investigation, but it is only one of a virtually unlimited number of enterprises that make up the life of any large city. One may think of newspapers, insurance firms, investment houses, for example, (or of individuals with comparable concerns) which are constantly in search of information, frequently of an esoteric kind, for which they depend on the public library--or would, if they felt that the library was in a position to help them. It is of course true that many of them maintain their own "special" libraries, but they must still look beyond their own resources for assistance. This whole process of interdependence should be studied, not only for its immediate value but for what it can contribute to the library school student in his own approach to the provision of needed information.

This discussion, though using the public library as the point of departure, has inevitably led to other kinds of libraries and to individuals with interests beyond "something to read." The focus is service to the community: how can it best be provided? With emphasis on the potential reader in need of information, the solution may be found not in any existing library but in the rapidly expanding field of investigation in methods of bringing to bear the needed information, wherever stored, on inquiries, however unusual or difficult.

From adults we turn to children. Surely no area is more important than library service to children, and libraries have probably achieved their greatest success in attracting and introducing children to books. At the same time, the disciplines of psychology and education have developed a monumental literature on how children learn, their reading behavior, satisfactions, and frustrations. It is difficult to say to what extent such studies have affected the preparation of children's and school librarians; indeed, it may well be that most investigations are too far removed from library involvement to bear much relevance to library practice. However, in spite of work already done, the sociology of reading with particular reference to children seems a fruitful one. What is the relation, for example, between the kinds of library books read and the child's background? How is library reading affected by the presence of other sources, such as friends' collections, bookstores, and the like? How is reading affected by television and other distractions--or does television stimulate rather than distract from reading? (See Himmelweit, 1958.) No less important are studies of reading effects: What happens to a child's attitudes as a result of reading? To what exent, if at all, are a child's prejudices, likes, and animosities nourished by what he reads? Strictly speaking, this may not be a library problem; still, since the librarian inevitably plays a role in determining at least *some* of the reading of *some* children, the better equipped he is in knowledge of children *as well as* in knowledge of books, the more effective his contribution to the child and to society.

These are merely illustrative of possible investigations in the motivation of reading of children; the more we know about it--as affecting children of different types, since children no more than adults constitute a homogeneous group--the better we may be able to prepare the specialist in library work with children. Aside from this, we might speculate that the curriculum in this area might be strikingly affected, with strong components in child psychology and in urban sociology added to the conventional areas of children's literature, story-telling, and administrative problems.

The school library has received considerable attention, particularly in recent years, and a set of standards has been developed to serve both as guidelines and as evaluative instruments. Investigations have subsequently been made to determine the extent to which given libraries meet or exceed the standards. But beyond such studies one might look at school library *performance*, especially since the standards themselves say nothing about measurement of service. One might look into the relation between size of collection and amount of student use per capita, or by groups differentiated according to scholarship, major interests, family backgrounds, etc. Since library use is the *end* toward which the standards implicitly are directed, studies of use might lead to a reconsideration, perhaps an evaluation, of the standards, and might suggest revision in some details. Needless to say, such investigations should have an impact on library school instruction in the school library area. As in other segments of the curriculum, the library school should do more than inculcate an awareness of current practice and of officially accepted standards; it should continually encourage students to ask how we know that a given practice is best to a given situation, even if it conforms to standards which themselves may be suspect because they are out-of-date or were originally adopted on the basis of necessarily limited evidence.

The current preoccupation with the larger unit of library service may seem more closely related to government than to community problems; in fact, the two coalesce, for changes in structure derive solely from presumed community needs and expectations which cannot be fulfilled by the conventional structure. The larger unit makes sense in the light of its ability to accomplish certain things that are difficult or impossible for the typical small library. Now the question arises, how has the nature of library service--what the library does, not what it is prepared to do--been affected by the transformation of the institution into system membership? Some results are readily identifiable: circulation to communities formerly deficient in library provision, perhaps a larger circulation, possibly the extension of types of material loaned. Others are worth examining: Since at least one outcome that was envisaged by the larger unit was the availability of a larger and more diversified collection than the independent library could possibly provide, how has the character of library circulation and reference use been affected? This of course is not to question the desirability of the larger unit, but only to suggest that the results as revealed in community use be studied. The Nelson Associates' study Public Library Systems in the United States observes: "Few libraries know whom they are serving, and almost none can assess accurately the costs of the various services they provide." (p. 246) The observation is elaborated in the following passage (p. 258):

> There are now no adequate measures for the values of many library services to the patron. The problem is not only to devise new measurements but also to translate the value into dollars. If this is to be done, much more needs to be discovered about the cost of services. There are no existing cost figures that can be used with any degree of assurance; figures are assembled in a variety of ways with varying care, and include different things.

Many additional questions for investigation are suggested (see especially pp. 259-61), and library schools should bring their students' attention to them. It would be difficult to point to another area so fruitful in giving the schools the opportunity to lead, rather than merely reflect, the trend in library organization and service.

Closely related to the larger unit is the metropolitan area. As the central city library has expanded its holdings, as it has moved into the acquisition of books, periodicals, and documents in little demand but invaluable to the serious student, it has reinforced its position as a magnet, as the focus for attracting patrons wherever they live in the city and from surrounding communities as well. Highways and interurban transportation facilities have all but wiped out the distinction between city and suburb and the territory beyond; the service area of a large city library goes way beyond the area responsible for its support. This whole process of dependence on the central city is one that could be usefully studied; how great is the external impact in terms of circulation, reference use, demands on personnel, etc.? What are the implications for external financing--by county, state, or federal government? The more we know the answers to such questions the better we can plan library expansion and financing--and the better we can prepare students for a useful role in such planning (2).

Before leaving consideration of the public library's role in its community, we shall devote some attention to the question: Does the library have a special role in improving community race relations? What is this role and how can it be exercised? It is of course naive to assume that the library alone, or that reading in general, can significantly influence attitudes among racial or national or religious groups; nevertheless the social implications of race relations are so serious that at the very least the library should ask what it could do if only to make a slight contribution.

The problem, though currently in the forefront of local and national concerns, is not new. An outbreak of racial violence in Detroit in 1943 led the Detroit Public Library to issue a pamphlet and reading list on race relations, and libraries have always been alert to the possibilities of contributing to the understanding and amelioration of social disturbances. The problem of racial animosities, particularly in large urban centers, has been aggravated by a number of factors which need no elaboration at this point. But the question remains: What if anything can the library do? Certain things seem obvious. It can try to attract the newly arrived resident to the library or to a branch; it can take the library (via deposits or bookmobile) to him; it can provide reading matter that he can grapple with; it can offer significant programs by film, lecture, records. It can provide materials to prepare one for successful job performance.

All these activities, and more, may be identified by field study or through correspondence or through analysis of the professional literature, and the listing alone might well prove suggestive to librarians generally and to students looking forward to a library career. But there are other aspects which are clearly worth investigation. What has happened as a result of the programs? How many people have been affected, at least to the extent of attending special classes or lectures? Can any figures be given on cost? Can the special programs be operated by conventional library personnel, or are they more properly conducted by social workers, formal educators, or others? If so, are there implications here for a change in library school curricula to provide a different kind of training either instead of the present or in addition to it?

We may conclude this section by repeating one of the questions raised in this inquiry: How can the role of the library in the community, present and future, be determined and influenced? The question has already been raised as to whether the library has a responsibility for all citizens regardless of their literacy and the presence of other inhibiting factors. There is likely to be some difference of opinion ranging from an unequivocal "yes" to a much more limited response. For example, Banfield has stated: "The proper business of the public library is with the serious reader and--assuming that the library cannot be an effective instrument for educating the lower class--with him alone." (Conant, p. 109) And in the same vein Burchard comments: "I believe the library should do its special job for those who need and want it and that other institutions, such as better settlement houses or youth houses equipped with smaller libraries, should prepare some youngsters to need and want the larger service, just as the schools and the hearths may prepare others." (Conant, p. 194.) These observations will strike a sympathetic chord with many; they will strike others as deliberately closing the door of opportunity to the disadvantaged. Whether the open door can actually lead to enrichment, to growth, or even to small satisfactions, is a question that might surely occupy many of our library schools.

From this focus on persons indifferent to the library or incapable of using it, we turn to the opposite extreme, those for whom excellent resources may still not be sufficient. These too make up part of the community. How can library schools prepare their students to cope with their needs? Or, to put the question in a somewhat different context, "What part can libraries play in the development of our communications and information-exchange networks?", a major consideration of the National Advisory Commission on Libraries.

This area is currently receiving the serious attention of information scientists, whether or not under the aegis of library schools. Much more is involved than the designing of hardware to make communication of information more efficient; what is required is investigation into the actual needs of scholars and scientists and the difficulties and frustrations they experience in meeting them. One might visualize greater library expansion, specialization, and interdependence as the most efficient and least costly approach to a solution; or one might ask if something still better is needed, bringing into play the whole panoply of technological devices aimed at the speedy retrieval of information without regard to its physical format or place of storage. Basically, however, we need to know how the advanced student and research worker can be aided in his scholarly pursuits; to find out, we need to begin with *him*, not with the mechanisms.

RESEARCH METHODS

Thus far we have tried to pinpoint certain problem areas where research might contribute not only to possible solutions but where it might affect the character of library education. A word now about methods for the collection and analysis of data. There is nothing particularly new in the methods necessary to pursue most of the studies, though this is not to deny the difficulties involved in many of them. Studies of reading and the distribution of reading matter have depended on analysis of circulation statistics, questionnaire responses, observation, and (infrequently) diaries (3). Needless to say, caution must be exercised to assure as much accuracy as possible, particularly in questionnaires and checklists. And since many studies will invariably rest on population sampling, some knowledge of statistical techniques is indispensable. Should training in research methods form part of the library school program? The same question might be raised about investigations centering around information storage and retrieval, where advanced mathematical and statistical competence is likely to be essential. That such training must be provided is beyond dispute; but that it should form part of the library school curriculum is doubtful. The important thing is that the potential investigator be equipped with the necessary tools, not that the preparation be limited to the library school. Particularly now, when all schools are part of colleges or universities which provide courses in mathematics, statistics, sampling methods, etc., it may be hoped that the student would be encouraged to take advantage of such courses where his own background may be limited.

The type of research suggested in this paper is not unique; it has long been conducted in the social sciences, and the literature of research methodology is plentiful. Perhaps only relatively few students will have an interest in investigation and the competence to pursue it, but the results may redound to the benefit of the library profession, and in time may be reflected in the library school curriculum; and perhaps in the creation of a corps of individuals for whom the study of library problems will be a lifelong adventure.

CONCLUSION

The library's role in its community has served as the point of departure for considering research needs. Hence the emphasis has been placed on actual and potential library users, ranging from the most sophisticated to the least, at least as far as access to library materials and information generally is concerned. Library use is certainly not all of librarianship, but without it the institution loses much of its reason for being. Inplicit in this emphasis on the user is the vague concept of social value--benefits to society at large as well as to the individual. This point has been so well made by the National Advisory Commission on Libraries that we may conclude by quoting one paragraph from its report:

"One theme emerges throughout all the activities of the National Advisory Commission on Libraries since its first meeting in November 1966. This is a strong social-benefit awareness, a service orientation that pervades every existing and conceivable library and information function. Perhaps it is not too soon to propose the criterion of social value as the most important in decision making--whether for broad central planning, more specific planning or immediate problem solving. We should look at the value to our people and our culture that accrues from the activities of the user whose functions are to be enhanced by improved availability of library and information services. A library can be understood only as it enhances a socially valuable function, one of which--and one that all libraries can enhance--is the personal intellectual and ethical development of every individual in our society. The variety of the other socially valuable functions determines the need for variety in kinds of libraries."

NOTES

(1) See, for example, pp. 13-16 in "The Mansfield Public Library," by Leon Carnovsky (November, 1967), (mimeographed.), 44 p.

(2) See Leon Carnovsky, "Changing Patterns in Librarianship: Implications for Library Education," *Wilson Library Bulletin, XLI*. (January, 1967), 489.

(3) See Leon Carnovsky, "Methodology in Research and Applications," *Library Trends* (October, 1957), 6:234-46; also "Survey of the Use of Library Resources and Facilities," *Library Surveys*, Tauber, M. F. and Stephens, I. R., eds. New York: Columbia University Press, 1967.

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PART III

DETERMINING RESEARCH PRIORITIES

Forecasting the future is an activity in which everyone engages at one time or another. We all make predictions of the weather and thus decide whether or not to carry an umbrella. A business manager predicts future sales and decides whether or not to build a new plant. A university admissions officer examines application forms and predicts which of the applicants will be successful students. Teachers, viewing the totality of accumulated knowledge in their own field of expertise, select information to be taught by forecasting the needs of the students two, four, ten or more years hence. Even as layman, we recognize the hazards of making predictions. Experts at forecasting have a greater appreciation of these difficulties, because they know the many pitfalls that prevent successful prognostication. Being experts they have developed procedures to minimize the hazards and to improve the accuracy of their predictions. This study makes use of some of these techniques.

The problem investigated in this volume is to predict those research studies that will promote the improvement of library education and practice. This is a problem of forecasting, and a rather difficult one at that; many variables are involved. We must, first of all, understand and describe the present state of library education. The survey of current courses offered by accredited and non-accredited library schools provides information on current educational practices. It does not however, identify problem areas, or needs, or possible solutions.

To obtain information on the deficiencies, or areas of needed improvement in library schools, as well as on research needed to plan correctional programs, experts were asked to write position papers analyzing selected topics in library education and practice. As is clear from the papers in Part II, these experts did identify problems and did suggest research projects for initiating improvements. The elements to be used in forecasting were thus identified, and the task delimited to predicting the probable importance and impact of the proposed research projects for improving library school education.

The Delphi Forecasting Technique was selected as the method of choice for obtaining the most accurate and controlled prediction of research needs. The chapters which follow provide background information about the Delphi, its application to the present study and the results obtained. In preparing this report, it is our intention to elucidate the principal features of the Delphi Technique, to describe them in sufficient detail, and thereby to encourage its exploitation as an appropriate survey research technique in Library and Information Science studies.

PART III SECTION A: THE DELPHI TECHNIQUE

CHAPTER XII

THE DELPHI TECHNIQUE: FUNDAMENTALS AND APPLICATIONS

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BACKGROUND ON THE DELPHI TECHNIQUE

Not all decisions that men are called upon to make can be improved upon by study; the 'bold man of action' has his place. However, a man disdainful of study, who is repeatedly called upon to make decisions, is likely to quickly erode his reputation for success and ultimately remove any claim to the right of further decision making. But there is a Charybdis corresponding to the Scylla of decisions without information; it is information without decisions. A would-be decision maker can become so enmeshed in detailed facts or in rhetoric that he becomes paralyzed to act. A compromise between these two extremes is surely desirable. It has been achieved, to some extent (in business circles principally) in the form of a 'people-based' information retrieval system, i.e., the decision maker surrounds himself with a small group of advisors who gather information and 'package' it appropriately to specific information needs (1). Seen in this context, the bold man of action, with his instantaneous decisions based on hunch or some sixth sense, begins to be perceived as an element from the realm of mythology.

The decision maker who relies heavily on others must, however, guard himself against the fate depicted by the aphorism that a man is no better than his advisors. He may achieve some degree of protection by being an avid reader and an attentive listener, by being able to "read between the lines" of reports, and to absorb added and alternate meanings on the basis of advisors' facial expressions. Nevertheless, his personal fact data bank and psychological talents are likely to be found wanting more than just occasionally. Thus, any new technique which promises potentially rapid response with concise, directly relevant information is highly welcome. The Delphi Technique is such a method.

The name of the technique arouses at least a modicum of interest in all who come upon it for the first time. Immediately the famous oracle comes to mind, the question arises: "What does a Delphi Technique have to do with the scientific method which this generation so highly reveres? Have we become so confused with the complexities of life that we have become disenchanted with the orderly scientific approach and have returned to listening to the ravings of a priestess who has thrown herself into a trance by drinking waters from hallowed springs, chewing consecrated bay leaves, shaking a laurel branch and breathing vapors mystically rising from the earth?"

A more solid clue to the modern use of the term "Delphi" can be gained from a look at the early days of the oracle when careful collection and shrewd use of information prevailed (2). A number of devices were employed at Delphi in order to gather information, including a network of 'spies' who mingled among the patrons of the oracle as they waited (sometimes for a very long period) to receive its blessings, and extracted every morsel of available information from them. The oracle was then able to confirm courses of action that had already been decided upon and to choose when to vary from its otherwise firmly established policies of vagueness and ambiguity in all foretellings, avoidance of decided positions on political matters, and maintenance of a conservative base on religious and philosophical issues.

The goals of the Delphi Technique are much the same as those of the oracle: to predict the future and to evaluate alternative courses of action, though not by deliberate use of vagueness and ambiguity! That is, a new methodology reigns: the "spies" have been replaced by researchers and the respondents are actually accomplices in the prediction enterprise. The details of this camaraderie will be laid bare as this chapter proceeds.

CONDUCT OF A TYPICAL DELPHI STUDY

A Delphi study involves at least two groups of individuals: the researchers who conduct the study and the respondents, generally a group of experts in the field under investigation, who answer the questions posed by the researchers. Though uniform to the extent of being in the same field, the respondents are normally chosen to represent the varying perspectives of managers, researchers, analysts, planners, educators, and any others to whom the questions have some special meaning. A study frequently begins with the researchers making an informal inquiry of the respondents as to what significant events are likely to occur in the field under investigation within a given period of time (usually a 10-30 year segment of the immediate future). In some cases only a portion of the respondents are involved in this initial phase of the effort. In even a smaller number of cases the listing of events is supplied by individuals who are not otherwise involved in the study. The researchers themselves may also get involved at this point. Armed with these usually loosely formulated suggestions, the researchers generate a questionnaire whose questions or proposals are more conducive to elicitation of a precise response of 1) when, or 2) with what probability, or 3) with what degree of benefit certain events or conditions will obtain. The questionnaire is then sent to the respondents by mail. (Speculations are that this might occur some day via a computer-based communications system not unlike that envisioned by EDUCOM.) (3)

The responses are developed in private--a fundamental element in the Delphi approach. This is done in order to avoid certain undesirable effects of face-to-face communication, such as specious persuasion, the unwillingness to abandon publicly expressed opinions and the bandwagon effect of majority opinion (4). Later additions to this list include the effect of the dominant individual (he who speaks loudest and longest wins the day!) and "semantic noise"--that portion of the conversation directed to matters other than the question at hand (e.g., to establish pecking order in the sponsoring professional organization's hierarchy).

Upon return, the answered questionnaires are analyzed by the researchers. Some basic statistic such as the median is calculated, and it along with the original questionnaire is sent back to the respondents for a second 'round'. On occasion, some of the questions may be omitted, e.g., in the case of events which all respondents feel will never happen. Alternatively, modifications may be called for if certain flaws in the questions become apparent, e.g., if the comments of respondents indicate that an altered form of a particular question may be more appropriate. Additional information may be sent to the respondents, or an inquiry may be made as to why a question was answered in the manner it was, especially when the answer is unusual. The purpose in doing this is to make the individual more rigorously question his views and to encourage him to express them; if his reasonings are sound the whole group may gain insight on a subsequent round. The purpose of this feedback (or iteration) element in the Delphi Technique is to effect interaction or concert among the respondents, who otherwise would be operating in a totally independent manner. This element distinguishes the Delphi approach from conventional survey research. Viewing the method from this perspective reveals it as a contribution to the survey research art.

Second and subsequent rounds in a Delphi study generally produce a degree of convergence of opinion. The basic tendency of humans not to be too extreme probably lies at the heart of this. Convergence, however, may well be countermanded at least to some extent as a consequence of the very "expertness" of the experts, who, it might be surmised, feel little pressure to change a position, once taken, when confronted by the (differing) opinions of others.

EARLY DELPHI STUDIES

The Delphi Technique was first discussed in detail in a monograph by O. Helmer, 1966 (5). This, along with another pair of reports by Helmer (6,7), reveals much of the philosophical underpinning of the methodology as well as portraying a number of the early applications. The Delphi Technique is described as a "new form of procedure within the scientific establishment"; Helmer endeavors to categorize it in relation to a general scientific methodology which is undergoing many changes, and in particular, being extended in a variety of new directions under the impact of computers, more sophisticated statistical analysis, multidisciplinary team approaches, and increased role for conferences and other people-to-people forms of communication. The phrase coined to represent the newer methodologies, (also the title of Helmer's monograph), "Social Technology", purports to contrast the almost Operations Research emphasis of these new approaches with that of the more conventional "Social Science" methodologies, which the new methods complement. This "technology" espouses the systems approach and exploits every possible benefit from mathematical modeling and simulation in the move toward greater precision. Helmer is quite the optimist about these developments, and in particular, about their potential application in helping to solve mankind's social, economic, and technological problems:

> "The newly discernable willingness to examine the applicability and refine the use of such tools in the social-science area, together with the computer capabilities on the horizon convince me that we are entering an era of potentially remarkable social progress."

were his comments directed more centrally toward library science, they would be highly reminiscent of those of Pierce Butler, who over thirty-five years ago pressed for the foundation of a "science" of librarianship as opposed to the almost entirely humanistic librarianship of the time. His plea for statistics and his appeal to the magic of numbers ("Theories of relationship derived from quantitative ratios usually involve the least danger of subjective misunderstanding" (8)) came at a time when statistics was dominated by methods more appropriate to the controlled experiment of the physical sciences. It would seem to follow that Butler's enthusiasm for "Social Technology" might even exceed that which he showed for "Social Science".

Time Prediction Studies

Beyond these more philosophical matters, the papers by Helmer contain the results of a wealth of individual Delphi studies illustrating the broad scope of the method. The appendices of Social Technology present a series of studies involving, for the most part, prediction of the time when certain events or conditions will obtain. The very first study, for example, focuses on predicting the advent of certain technical and scientific developments having "general public interest", such as: synthesis of artificial life; production of artifical plastic and electronic organs; control of gravity through means of gravitational field modification. The timing for the appearance of these developments was left open even to the extent of their never happening at all, a fate bestowed in large measure by the respondents on the use of telepathy and ESP in communications. The resulting predictions are presented as house-shaped pictographs (now almost a universal characteristic of Delphi project reports) which display the median response along with the inter-quartile range or other appropriate central and dispersion measures. Tables I and II show a typical display of the results of a Delphi study.

A number of other time prediction studies were performed and are reported in these appendices: one on general automation (of labor, medical diagnosis, education, transportation, etc.); one on space progress (a Mars landing and return; a Pluto fly-by, etc.); and another on weapons systems (battlefield computers, robots, incapacitating biological agents, etc.).

By compiling results from several independent Delphi studies and taking the cross-sections for a given year, a composite picture of the likely state of development of technology, human resources, etc., at that time can be formed. Appendix I of Helmer's book presents such composites for the years 1984 and 2000. Results compiled in this manner constitute a form of packaged information useful as input ("feed-in") for further Delphi predictions. For example, predictions on educational needs in Library and Information Science in the year 2000 would probably be more sound if predictions of technological developments, the general state of human knowledge, and perhaps other factors were made available to respondents.

Evaluation Studies

As part of the study on automation, ten proposed measures for abating automation-produced unemployment were rated according to the three parameters of effectiveness, desirability, and probability of their being utilized. The evaluative scales covered negative, nil, neutral, minor, moderate and high, while the probability scale spanned minor, moderate and high. Most of the proposals were prosaic ones (e.g., creation of new (unspecified) types of work, retraining, government aid to depressed areas, legislation proscribing certain kinds of automation activities) and none of them emerged with a high rating across the board, the highest set of ratings being achieved for the creation of new types of employment: high on desirability; moderate/high on effectiveness; moderate/high on potential.

Another evaluation study concerned foreign policy proposals, for which the same three criteria were employed. In this case only a condensed scale was utilized involving high, medium and low values. If substantial agreement was obtained for any of these scale values, it is underlined in the report, e.g., if one-third of the group assigned a high value, one-third a low value, etc. there is no underline but if 60% assigned a low value and 20% a high value, etc., the "low" value appearing in the table of result is underlined. Underlining appears frequently in the table of results, indicating that substantial agreement was not a rare event. High scores across the board were given only to three proposals, all of which dealt (basically) with defensive military initiatives.

EXPERIMENTAL STUDIES OF THE DELPHI METHODOLOGY

A new method such as the Delphi must undergo thorough examination if only to ascertain whether its early promise can be sustained. Experiments on the Delphi Technique have begun in earnest and some results are already available concerning such matters as: what constancies exist from study to study; what form (if any) of interaction between the researchers and respondents is optimal; and the most basic question of all--how accurate can a method of this type be. It is convenient to separate the experiments into two classes: 1) those concerned with collecting, comparing, and cataloging the results of typical Delphi studies; 2) those concerned fundamentally with accuracy of results. The former generally constitute a more straightforward form of examination in the sense that they can be performed on any Delphi study. Such examinations may nevertheless be quite detailed, requiring statistical knowledge ranging from the elementary to the most complex. The latter type of examination is quite special and involves the concept of error. In order to measure error, a synthetic Delphi procedure must be developed, one in which the answers to the questions are known or can be estimated accurately. A series of studies by N. Dalkey and his co-workers (9,10,11,12) which constitute the basic corpus to date for assessment of Delphi methodology and which treat these matters, will now be reviewed.

Study of Elementary Characteristics

Among the data that can be readily collected in any Delphi study are those relating to 1) the issue of reliability, or more specifically, the effect of group size on reliability; 2) the likelihood and magnitude of respondents' opinion change on one round as a function of distance from the median on a previous round; 3) change of opinion as a function of sex; and 4) the form of the distribution of responses on the various rounds.

1) Reliability is important for any experimental procedure. For the Delphi Technique, reliability presupposes that different groups of equal expertise produce similar results. Reliability obviously depends on group size, the expectation being that, as group size increases, reliability increases. Experimental results indicate that reliability, measured by the correlation coefficient taken over a collection of questions for pairs of respondent groups of varying size, behaves in this expected fashion.

2) Questionnaire feedback is of such central importance in the Delphi approach that any experiment analyzing patterns of convergence is of great value. First of all, there exists an undeniable "pull of the median". That is, a respondent's answer on a second round is likely to move toward the group median. Within limits, this pull increases as a function of the distance of the respondent's answer from the median: the likelihood of change is effectively a linear function for smaller distances from the median, leveling off for larger changes, presenting an overall ∿ - shaped appearance when graphed; the magnitude of change demonstrates a similar tendency but not quite so clearly cut.

3) A complete study of male-female effects involves more than a simple comparison of opinion change from a first to a second round, but the basic result on this single issue is in accord with the layman's view: women do live up to their image of changeability. Other aspects of this topic are discussed below.

4) The form of the distribution of responses for first-round answers to questions requiring numerical estimates appears to be log-normal, suggesting that respondents were directing their thoughts to orders of magnitude rather than to the precise numerical values of the answers. Second-round answers appear to deviate somewhat from this distribution, and cannot be assigned a standard (i.e., "name") distributional form. If it could be shown that a certain distributional form tends to accompany more

accurate answers, techniques might be employed even in single round surveys to educe it.

Study of Errors

Error measurements suitable for the Delphi context can be formed in either of two ways: 1) the absolute difference between the group median and the correct answer, and 2) the stated difference divided by the correct answer, more appropriate when interest is directed to percentage of error. The concept of error is thus simple to form. However, real-life Delphi studies deal almost exclusively with questions for which answers are not known and cannot be discovered by any conventional means. Therefore, error cannot be measured in most studies. It is possible, however, to create a synthetic Delphi procedure using questions for which answers exist, but which are almost certainly not known to the respondents. Ideally, the questions will be of such a nature that the respondent's efforts in arriving at answers to some degree simulate the act of opinion formation, as opposed to factual responding (as would be the case with the "handbook" type questions such as soliciting Avogadro's number from Physical Scientists). Perhaps the most suitable choice, that which Dalkey and co-workers picked, is to create questions from information in almanacs. Such questions are frequently quantitative and are of such a nature that the respondent can often figure out a 'ballpark answer'. A typical question might be: "What was the population of France in 1650?" or "When was gunpowder invented?".

Questions of the type just described can be used to perform experiments concerning fundamental assumptions of the Delphi method, such as demonstrating that error diminishes with increasing group size--a result comparable to that for reliability. And they have the added appeal that supplementary facts can be supplied along with the question, e.g., the population of England in 1650 might be provided in the attempt to elicit the population of France in the hypothetical question mentioned above. Such a variation on the basic method is but one of the many possible avenues for further experimenting with the technique in the hopes of improving accuracy, the most important purpose of the study of error. Other potentially productive error-reducing techniques center on: possible elimination of questions on subsequent rounds of the questionnaire feedback; other variations in the form of the feedback; and respondent self-ratings.

Elimination of questions on subsequent rounds of the feedback procedure rests on the basic fact that convergence does not always produce desirable effects. For example, when the initial median is different from the correct answer and the deviation is small, further convergence toward the median draws the almost correct answer away from the correct value. Although the answers displaced from the median on the side opposite the correct answers are drawn closer to the true value, overall error may increase. The suggestion then arises that questions for which the (relative) deviation is small be eliminated from the questionnaire on subsequent rounds. Despite this logic, however, no very significant improvements in overall error have been achieved through this means. That questions for which the error standard deviation is small do not contribute a very large fraction of the overall error perhaps plays a significant role here.

Hoped-for reductions in error which proved elusive in the simple approach just outlined have been sought through more complex forms of feedback. A spectrum of feedback levels has been used in the experimental framework: respondents can be given 1) none; 2) medians; 3) medians and interquartile ranges; 4) simple percentile ratings (for each individual's response); 5) statistical feedback (usually medians) plus additional information in the form of "soft facts" (i.e., facts of a more subjective quality, such as the reasons given by respondents whose answers were outside the quartiles); 6) statistical feedback plus additional "hard facts", i.e., facts in the form of related or comparative values, upper or lower bounds, or even qualitative facts.

Utilization of no feedback provides the control level for the standard Delphi procedure: for, if feedback does not produce an improvement over iteration without feedback, the rationale of the Delphi Technique is destroyed. However, feedback does produce an improvement both in terms of the number of respondents whose answers improve as well as in over-all group error. A subtle point exists in connection with the latter measures: improvement in them does not necessarily imply a better median result; i.e., the roof of the "house" may become steeper with the apex remaining inthe same place, resulting in (perhaps) the same median and less overall error.

The second, third, and fourth options above, dealing with the basic level of statistical feedback, prove not to be significantly different in their consequences, a result that is not intuitively obvious. Even less obvious is the fact that no improvement is achieved through supplying supplementary "soft facts" in form of giving the reasons of those whose answers were farthest from the median; giving the reasons of those whose answers were closest to the median seems not to have been tried.

The finding with supplementary "hard facts" is that they do prove successful in lowering group error. Three different kinds of such facts have been used: comparative, qualitative, and upper or lower bound. Providing the population of England in 1650 in attempting to elicit the population of France in the same year is an example of a comparative fact. That the Chinese invented gunpowder is an example of a qualitative fact. An upper bound fact is exhibited by providing the career home run total of Babe Ruth in attempting to elicit the number of home runs he made in a given year.

Sex differences in Delphi response characteristics have practical consequences since the proportions of sexes can affect the results. The significant factor is that women take greater advantage of "hard facts", resulting in greater improvement than that shown by men on subsequent rounds. Though women are less accurate on the initial round their greater changeability tends to dispose of any difference on the final round.

Reduction of error via self-ratings has perhaps the longest tradition and the best prospect. Early examples of their use are included in Helmer's book and the doctoral dissertation by Campbell (13). Two kinds of self-rating can be identified: competence and confidence. Though these terms may frequently be assigned simultaneously to one and the same respondent, they are not necessarily synonymous. For a respondent can realize that a question is in his field of expertise and that it is not one for which he can supply a good answer; conversely, one can be confident of knowing an answer to a question outside his immediate specialization. (Most studies have involved either one of these two, but Campbell (loc. cit.) used a combination of the two.) An important initial finding is that any single individual who rates himself highly does not do better consistently than the group as a whole. The earlier statement to the effect that a single individual is not as accurate as a group over a range of questions can be strengthened to read that no single expert, no matter how confident and/or competent, can be expected to be as accurate as the group. Though individually assigned high ratings cannot be exploited, group ones can; those questions on which the group as a whole feels confident or competent are those for which group accuracy is highest. These results probably can be ascribed in large part to the mechanism responsible for decreased error with increased group size, a mechanism that operates for competent and/or confident respondents as well as for the "ordinary" individuals in the group.

An implication of these several findings has been verified by experiment: accuracy can be improved by selecting a subgroup of sufficiently large size to overcome the small group effect and for which the average self-rating is significantly higher than that of the rest of the group.

These criteria are such that a sub-group cannot be devised for some questions. In a particular study the high rating subgroup consisted (by choice) of at least seven members. The need to extract significantly higher average self-ratings led to the result that a subgroup could be devised for only 156 of 240 questions. The outcome, comparing the high-rating subgroup to the entire group, was that the high-rating subgroup was more accurate on 95 questions and less accurate on 52, the groups being the same on nine questions. These results, while making it clear that self-ratings are no panacea, clearly indicate that the use of self-ratings shows promise.

LIBRARY-INFORMATION SCIENCE RELATED STUDIES

The discussion above suggests that the Delphi Technique has reached a stage of sufficient maturity that it can profitably be applied to solving problems in many different areas. A critical area of application in Library and Information Science, discussed in some detail in the next chapter of this work, is the identification of major research needs in education for the profession. Two other studies in closely related fields warrant attention: that of Helmer (14) on general educational issues; and that of Bjerrum (15) on forecasting technological developments in computers and their applications, the results of which are exhibited in Tables I and II.

An Education Study

Helmer's report begins with background issues in planning for educational innovation. He outlines the potential scope of the Delphi Technique in this context, including applications at all levels of education from grade school to university. This sets the stage for a particular application in which the respondents were presented a large number of proposed educational innovations with instructions to distribute the monies of a hypothetical budget among the proposals. The proposals were classified into several groups under the following headings: increase in student participation; educational R & D; model facilities; administration of school systems; internal administration of schools; professional staff; costly new equipment; reorganization of instruction and program; adult retraining; education in the home; education of the underpriviledged. The results were published in terms of these categories. The individual proposals were also categorized according to cost, in three categories. Different groups of respondents were then called upon to supply their evaluations in each of these categories. The technique used to produce the evaluations, i.e., distributing a fixed budget over many viable proposals, represents a particular kind of variation of the Delphi Technique which simulates the decision-making environment that frequently exists in political and other organizations. The situation in the study was somewhat ideal in that there was an enormous budget to allocate and there were no special interest groups, no persuasive rhetorics, and no threat from the voter to remove or restrict freedom of action. Nevertheless, the technique seems to provide a means for avoiding what can easily happen when a group of respondents is asked to pick and choose among a set of good alternatives: almost all of them are given a moderately good rating, thereby leading to no clear resolution as to which choices ought to be made.

Helmer stressed the need to keep technological change in mind in making long-term projections for education. However, doing so would seem to require a more complex kind of survey than was employed in his study--perhaps one in which technological developments are predicted in an initial survey and the results of this study are packaged and used as supplementary fact feed-in to the participants in a later (evaluative) study to assess the educational impact. That this more complex mode of inquiry was not utilized in this study may well be the cause of why the bulk of the monies for innovation were assigned to conventional rather than highly innovative technology-based proposals. This is not meant to deny the existence of needs in the areas chosen (e.g., teachers' salaries and scholarships). However, the spectre of the old Delphi arises: "maintenance of a conservative base" and confirmation of "courses of action that had already been decided upon".

A COMPUTER DEVELOPMENT AND APPLICATIONS STUDY

Because much of the background of the inventors and popularizers of the Delphi Technique has been technological and/or technologically related there have been a number of Delphi studies with a technological slant; many of these are of course of great interest to Information Scientists. Some of the automation results reported in the appendix to Helmer (5) fall into this class. A study of this type--developments in computers and their applications potential--is that of Bjerrum (15,16). Computer development questions in this study dealt with memory systems, input/output devices, software-emulating hardware, computer sizes, prospects for computers that 'learn', and prices of typical hardware; Table I illustrates the results for these predictions. Applications covered the areas of industry, taxation, transportation, medicine, education, libraries and the home; Figure 2 illustrates the results for these predictions.

The logical dependency of the computer applications predictions upon the computer developments predictions suggests that the predictions on the developments should be made known to the respondents before eliciting their predictions on applications. Though this was not done in Bjerrum's study, the study itself provides discussion of a number of significant issues of direct concern to the future of Library and Information Sciences. The very general applications scope, which includes libraries, leaves room for more specific studies in each of the areas it impinges upon, as well as for tightening up the methodology.

TABLE I

COMPUTER DEVELOPMENTS

1) Flexible internal storage, i.e. easily increased or decreased in size and at will with use of plugging units
2) Majority of software built into the hardware, i.e. small packages of integrated circuits to be attached to the computer
3) Briefcase computers ("advanced slide rules" with large memory)
4) Oral input to the computer
5) Laser memory
6) Transmission of data by laser signals
7) Cards and paper tapes no longer used as a communication medium
8) One million byte memory small enough to be included in an independent desk computer
9) Pocket size computers ("advanced slide rules" with large memory)
10) Computers learning from their experience
11) Computer price decreased with a factor of 100

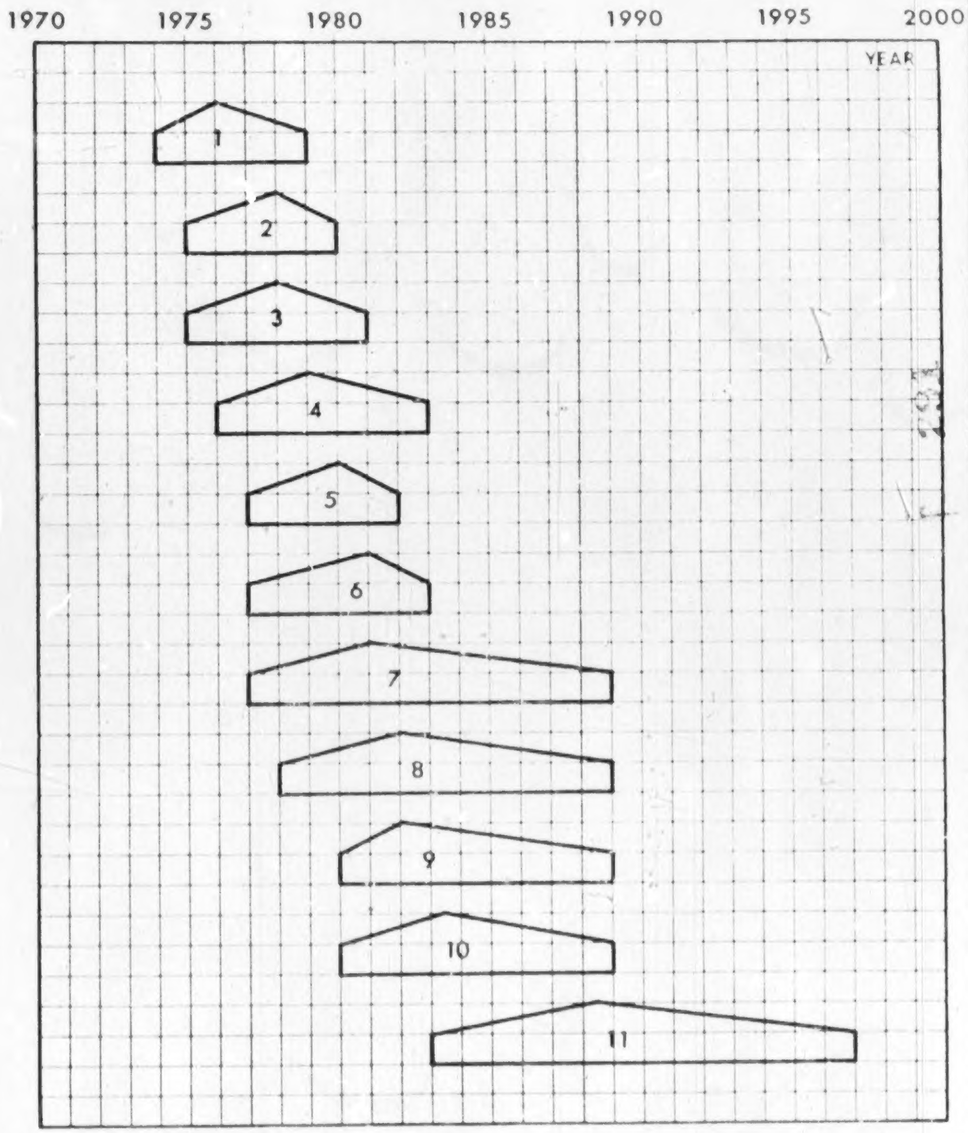

Illustration of the results of predicting computer developments for the period 1970 - 2000 using the Delphi Technique, taken from Parsons and Williams report edited by Bjerrum (15).

TABLE II

COMPUTER APPLICATIONS

1) Direction of large urban traffic flow by computer

2) Control of patients in major hospitals by computer

3) Widespread use of Computer Aided Instruction (CAI) in schools

4) Computer controlled commercial airplanes including takeoffs and landings

5) Recording of scientific and other advances so that constantly updated status is maintained in central files

6) Computer as diagnostician (giving reliable results)

7) Policing of individual vehicles by combined radar detection and computer record of violation (license number, excessive speed, etc.)

8) Majority of doctors having a terminal for consultation

9) 50% reduction of labor force in major industries because of EDP automation

10) Recording of all income by majority of employers on terminals and automatic transfer of this information to various tax authorities

11) Instruction at home through computers

12) Obsolescence of book libraries as known today for general factual information

13) Widespread use of automobile autopilots

14) Computers as common as telephone or television in private homes

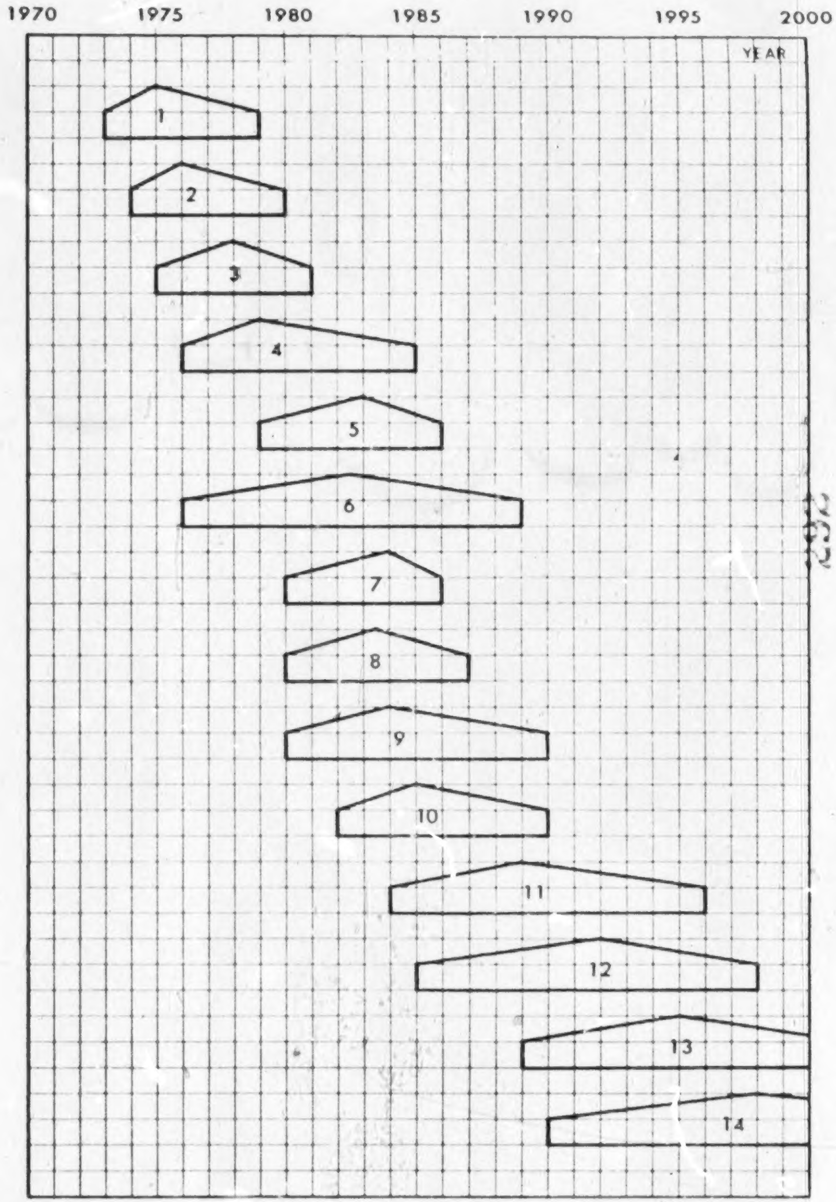

Illustration of the results of prediction of computer applications for the period 1970 - 2000 using the Delphi Technique, taken from a Parsons and Williams report edited by Bjerrum (15).

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PART III SECTION B: RESEARCH NEEDS

CHAPTER XIII

PREDICTING RESEARCH NEEDS IN LIBRARY AND INFORMATION SCIENCE EDUCATION

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INTRODUCTION

The previous chapter presented a general introduction to the Delphi technique and its applications, including a discussion of recent experiments aimed at elucidating some of the mechanisms underlying various aspects of the method. The present chapter describes, in detail, a specific application of the Delphi method to the determination of the "Needs for Research in Library and Information Science Education". The task undertaken by the investigators was to predict the relative importance and probable impact that proposed research projects would have in improving library and information science education. Since the impact of the research would not be felt until sometime in the future, the task was formulated as a problem in prediction, and the Delphi technique was used to obtain accurate measures of group opinion on the relative importance of the various research projects which had been proposed in the field of library and information science education.

DEVELOPMENT OF THE QUESTIONNAIRE

As has been noted previously, a typical Delphi study begins with a survey of alternative courses of action. In the present study, possible research projects of importance to library and information science education were obtained by having educators review the literature, identify problems and suggest research which, if undertaken, could contribute toward the solution of these problems. The reports of these consultants are reproduced in Part II of this work. Approximately eighty non-independent projects were suggested. These had to be edited before inclusion in a rating questionnaire.

The proposal statements went through several stages of review. The project staff met with senior members of the UCLA Survey Research Center and debated the form and substance of each item. In order to make the survey as simple and as painless as possible for the respondents, we agreed on the desirability of reducing the number of items to about half. Some of the originally suggested projects overlapped, and so it was possible to pare the list down by eliminating duplicates and combining related projects. The latter task was not simple, and one of the critically debated issues was whether the value of certain projects was diluted or made less practical by a proposed combination. Another, perhaps less crucial debate, concerned the issue of whether it was "research" to organize a conference (see proposals 6 and 13). It was decided that since conferences had been suggested as projects, they should be accepted as such. When it was agreed that a proposed topic should be included in the questionnaire, the item was cast in a canonical form beginning with the phrase: "It is proposed that a research project be undertaken to . . .". Then the wording of each item was carefully studied in order to eliminate possible ambiguities.

After these internal reviews, a preliminary form of the questionnaire was prepared and the format and content of the items were discussed with, and approved by, the project advisors. Finally the preliminary form was pretested by being administered to about three dozen subjects who, after completing the questionnaire, were asked to comment on any difficulties they might have had in scoring the items. Even at this stage some changes were made.

The object of all this debate, advice and pretesting was to provide the respondents of the questionnaire with a wide range of reasonable alternative research proposals which, when ranked, would result in meaningful information on the relative importance of different types of projects. When all the reviews were completed, the printed questionnaire was prepared. The final choice of the projects included in the questionnaire was the responsibility of the principal investigator, the author of this chapter. It contained thirty-six items covering the range of topics that had been proposed for research to improve library education. Couched in broad categories, the list includes the objectives of library education, curricula, methods and techniques of instruction, continuing education, administration, library skill requirements, etc. Respondents were asked to assign a single "importance" score for each proposal. The cover letter which accompanied the questionnaire defined "importance" in terms of "how desperately library school educators and library administrators need the kinds of data that the suggested research projects would provide and . . . the probable impact that the anticipated research results would have on library education and practice." Every proposal in the questionnaire was to be rated on a scale from 0 to 100. Each twenty point mark on the scale was assigned to descriptive phrase, e.g., "20" signifies "of very little importance", and "100" indicates "of very great importance". Considering the types of proposals included in the study, it is interesting to note that the range of responses in practically every item varied from 0 to 100; that is to say at least one person thought the project to be practically useless and at least one other considered it to be of very great importance. This diversity of response was convincing evidence that the items selected were capable of providing meaningful and varied opinions.

A copy of the questionnaire is included as Table I of this chapter.

SELECTION OF RESPONDENTS

The choice of respondents in a Delphi study is generally designed to provide a fairly broad range of representation from competent and interested individuals in the areas under investigation. The present study, with its primary focus on education, utilized a sample drawn from all over the United States and Canada made up of teachers, librarians, researchers, government officials and workers in industry. This was not a random sample but rather a highly selected sample composed of people who had a stake in library education and who were competent to evaluate the probable effectiveness of proposed research. The specific names of the respondents were suggested by the project advisors. The largest single group of subjects were associated with library schools, but many other groups were represented in sufficient numbers to justify a separate Delphi analysis. The organizational affiliation of the respondents is listed in Table II. The original list, to whom the first questionnaire was sent, consisted of 160 individuals. This number was selected in order to allow for attrition in the hope that at least 100 people would respond to both questionnaires. The final total of completed questionnaires returned for both rounds was 104!

DELPHI STUDY: ROUND I RESULTS

Two weeks after the questionnaire was mailed to the 160 respondents, a follow-up letter and questionnaire were sent to those subjects from whom responses had not been received. One month after the original mailing, 129 questionnaires had been returned; this is a phenomenal 83% response and is indicative of the high interest and excellent cooperation with which this project was received.

A number of preliminary analyses were performed on the data. First of all, each returned envelope and form were examined for comments. Although no great effort was made to solicit comments, approximately 20% of the respondents felt moved to make some remarks. These were all read carefully, obviously because we were interested in the comments but also in order to determine whether any of the items would have to be reformulated. For the most part the comments were of a rather general nature, and there was no focussed

TABLE I

A STUDY OF THE NEEDS FOR RESEARCH IN LIBRARY AND INFORMATION SCIENCE EDUCATION

Los Angeles, California
February 4, 1970

C

Dear Colleague:

The Association of American Library Schools, with the support of the Library Sciences Research Branch of the U.S. Office of Education, has undertaken a project to study what research is needed to improve the effectiveness of library school education. In the course of this study, the organization, structure and content of library schools has been analyzed and a number of research projects have been proposed to gather the information needed for improving library education. The amount of money available to support such research is not adequate to undertake *all* worthwhile projects. Your help is needed to determine the importance of the proposed projects and to establish priorities.

Your name has been selected as part of a controlled sample of only 100 educators and researchers, because we need *your* opinions.

In the following pages, thirty-six possible research projects have been briefly described. You are asked to rate each of these projects by placing a "/" crossing a point on the accompanying 100 point scale which best reflects your professional judgement of its potential importance. Importance can be judged on the basis of how desperately library school educators and library administrators need the kinds of data that the suggested research projects would provide and by estimating the probable impact that the anticipated research results would have on library education and practice.

When you have completed the ratings, please return the questionnaire in the self-addressed, stamped envelope. Your name will in no way be connected with your replies in the analysis of this study. You will, however, be informed of the results of all the ratings as soon as these are available. You will also be provided with an opportunity to re-evaluate and modify your own rating in light of these averaged results.

These ratings will have significant impact on future library school education and research. Your opinions therefore are important in this critical study concerning our profession.

Sincerely yours,

Harold Borko

Harold Borko
Project Director

HB:mk

ID # ______________

THE SCALE

IN ALL CASES THE REFERENCE POINTS ON THE SCALES HAVE THE FOLLOWING MEANINGS:

0 = of no importance
20 = of very little importance
40 = of slight importance
60 = of moderate importance
80 = of great importance
100 = of very great importance

It is proposed that a research project be undertaken to:

01. Develop a set of job analyses for library positions that concentrates on the knowledge required rather than on the operations performed for specialized education in library practice.

0 |—|—|—|—|—| 100

02. Estimate, for purposes of library school curricula planning, the future impact of technology on various types and sizes of libraries with particular reference to when these libraries will be able to afford and use automated information processing techniques in their normal operations.

0 |—|—|—|—|—| 100

03. Investigate the validity of generally held ideas and practices concerning the physical facilities, equipment and space needed by library schools to make teaching, studying and research more effective.

0 |—|—|—|—|—| 100

04. Investigate the special problems involved in the recruitment, selection and education of minority group students and others that require special attention.

0 |—|—|—|—|—| 100

05. Determine the degree of duplication and coordination in the programs and activities of the several professional associations or units concerned with education for librarianship and related fields.

0 |—|—|—|—|—| 100

06. Organize conferences on a regional basis to encourage wider utilization of newer media and materials demonstrating and evaluating some recently completed experiments on the applications of innovative procedures to library school education, e.g.,
   a) cataloging as taught by computer-assisted instruction and by Tele-lecture,
   b) children's literature and storytelling by television,
   c) library automation by videotape.

0 |—|—|—|—|—| 100

07. Investigate the need for and the function of the doctorate degree in librarianship as well as the desirability of having another type of advanced degree that is service rather than research oriented, e.g., a Doctor of Librarianship.

0 |—|—|—|—|—| 100

08. Evaluate the standards, procedures and costs in accrediting library schools including the extent to which quantitative data can be used as an index to the quality of a library school.

0 |—|—|—|—|—| 100

09. Investigate (a) the administrative and management roles that librarians are likely to fill, during their first five years on the job, in such areas as planning, cost and production control, personnel, systems analysis, etc., (b) the knowledge and skills required to properly carry out these functions, and (c) whether current library school curricula are providing adequate preparation.

0 |—|—|—|—|—| 100

10. Develop an instrument to be used in periodic national surveys to:
   a) determine the self-perceived educational needs of professional librarians and their job functions and personal characteristics.
   b) recommend content and methods of providing continuing education.

0 |—|—|—|—|—| 100

11. Evaluate the effectiveness of postgraduate supervised training programs and to study the desirability and practicality of utilizing practicum training in continuing education programs.

0 |—|—|—|—|—| 100

12. Investigate the possible roles that libraries and library schools could fulfill, and the methods they could use, in improving race relations and in providing library services to minority and culturally disadvantaged groups.

0 |—|—|—|—|—| 100

13. Organize conferences on a regional basis to demonstrate the methodology and effectiveness of innovated teaching techniques in library education, e.g.,
- a) seminar method,
- b) case study method,
- c) field work on supervised internship.

0 |—|—|—|—|—| 100

14. Compare and evaluate the effectiveness of MLS educational programs that emphasize more core curricula and less specialization, vs those that minimize the core program in favor of specialization.

0 |—|—|—|—|—| 100

15. Investigate problems relating to library school financing, including such matters as basic budgets and sources of funds (federal, foundation, etc.) for additional library activities and projects, e.g., student aid.

0 |—|—|—|—|—| 100

16. Investigate ways to achieve close coordination of library school activities with the programs of the university library, the university in general, and the community.

0 |—|—|—|—|—| 100

17. Investigate factors influencing the selection and retention of students, including:
- a) educational background and work experience,
- b) personality, attitudes and goals,
- c) performance measures,

and the relationship between academic performance and job success.

0 |—|—|—|—|—| 100

18. Study and compare the effects that different accreditation procedures and the organizational level of the accrediting bodies (e.g., national, statewide, professional association, etc.), have on professional education in librarianship and other fields.

0 |—|—|—|—|—| 100

19. Study the feasibility of a national program of continuing education for librarians and evaluate this and alternative ways of providing continuing education through the effective utilization of library schools, libraries and professional associations.

0 |—|—|—|—|—| 100

20. Evaluate pre-service and in-service laboratory experience in:
- a) bibliography and reference work
- b) catalog practice
- c) information storage and retrieval,

and support faculty visits to these demonstration laboratories.

0 |—|—|—|—|—| 100

21. Study the patterns of communication and information exchange among library scientists and compare these patterns with those of other professionals as identified in the study of the American Psychological Association.

0 |—|—|—|—|—| 100

22. Study the motivational factors related to levels of participation in continuing education activities, including the attitudes and support of top library management to such programs, and the correlation between an involvement in community affairs and personal professional growth.

0 |—|—|—|—|—| 100

23. Investigate the "sociology of reading" in order to determine relationships between
- a) the effect of reading on scholarship interest patterns, prejudices, likes and animosities;
- b) the effect of television, or other distractions, on reading;
- c) the effect of paperbacks on library use, etc.

0 |—|—|—|—|—| 100

24. Investigate the extent to which the duties required of an MLS graduate in his first professional position are those that could be performed by library technicians.

0 |—|—|—|—|—| 100

25. Construct a model, based upon an adequate sample of libraries, which can be used to provide educators and administrators with information on actual and anticipated personnel needs by geographic area, by size and type of library, by function, by skill level, etc

0 |—|—|—|—|—| 100

26. Study current library use patterns in order to identify and relate elements in the library system and in the community that influence the nature of library use by various individuals and groups.

0 |—|—|—|—|—| 100

27. Investigate problems relating to library school organization, including:
   a) the role of faculty and students in decision-making and curricula planning,
   b) the size and stability of the faculty,
   c) the desirability of using non-library specialists for teaching,
   d) the means of encouraging innovative teaching and creative research by faculty.

0 |____|____|____|____|____| 100

28. Survey and disseminate information about the activities and programs concerned with the organization and bibliographic control of the newer media and the extent of in-house and local producting of such materials for use in library education.

0 |____|____|____|____|____| 100

29. Investigate factors that influence recruitment and selection of faculty, including:
   a) education and preparation,
   b) research and publications,
   c) use of specialists and part-time faculty,
   d) factors that contribute to excellence in teaching.

0 |____|____|____|____|____| 100

30. Investigate methods and techniques of developing close reciprocal relationships between professors of library science and practicing library administrators in order to enhance the relevance of library school education.

0 |____|____|____|____|____| 100

31. Investigate the effect of establishing research centers in library schools on the school's curricula, publications and research activities.

0 |____|____|____|____|____| 100

32. Explore possible roles that a graduate library school could perform in developing educational materials for in-service training programs.

0 |____|____|____|____|____| 100

33. Study the trend toward specialization in library education and compare with that of other profession schools, e.g., engineering and social work.

0 |____|____|____|____|____| 100

34. Investigate the relative merits of providing courses in information science and library automation
   a) as part of the regular library curricula,
   b) as specialized post-MLS training,
   c) as special short-term courses (credit and/or non-credit).

0 |____|____|____|____|____| 100

35. Develop model packaged programs of study in areas pertinent to the needs of librarians for updating and expanding their knowledge. Such programs could include programmed budgeting, automation, library insurance, MARC II tapes, etc.

0 |____|____|____|____|____| 100

36. Develop measures of professional proficiency in library service functions at different levels and skills, so that these may be used in evaluating the education and training provided.

0 |____|____|____|____|____| 100

THANK YOU FOR YOUR COOPERATION

YOUR COMMENTS ARE WELCOME

TABLE II

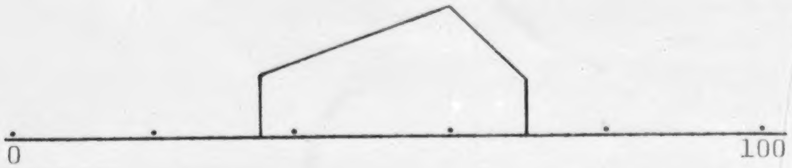
Organizational Affiliation of Original Sample

ORGANIZATIONAL AFFILIATION	NUMBER OF SUBJECTS
1. Library Schools	90
2. Universities and Colleges	
Libraries	26
Other Departments	5
3. Governmental Bodies	
Federal	10
State Departments of Education	5
4. Public Libraries	5
5. Professional Associations	10
6. Industrial Organizations	7
7. Unidentified	2
TOTAL	160

criticism on any of the individual questionnaire items. Consequently, no revisions were made for the second round of the Delphi study.

Other aspects of the analysis consisted of calculating various statistical elements useful in describing the data. All of the questionnaire responses were keypunched and the analyses completed on the computer by means of standard statistical programs. Each questionnaire item was treated as a separate distribution with an "N" of 129 and following statistics computed: median, mean, standard error of the mean, standard deviation, skewness and kurtosis.

The minimum results that we wished to obtain from this first analysis were the median score and semi-inner-quartile range for the distribution of scores for all thirty-six items. In keeping with the traditions of the Delphi technique, feedback by means of a second questionnaire would be provided in the form of a diagram in which the median and semi-inner-quartile range would be shown on each scale as illustrated.



Although the median was used for feedback purposes, the statistical analysis of the data was based upon the mean and standard deviation; so of course these scores were calculated. It was also necessary to gain an understanding of the shape of each distribution and the degree to which it deviates from the normal distribution curve, e.g., the degree of skewness and kurtosis. Our basic hypothesis was that although the mean score of each questionnaire item may not shift substantially from the first to the second round, the standard deviation should decrease and the shape of the distribution become more leptokurtic or peaked. Should this occur, then the rank order position of each item would become more significant even though the ranking had not changed.

Table III is a rank order of the questionnaire items by mean score. Also included on this table are the standard deviation and median scores. For simplicity, skewness and kurtosis scores are not included. It is important to note that although the ranking by mean and by median are highly correlated, there are some inversions. Specifically, item number 24 would be ranked 1 by median and 5 by mean.

TABLE III

Rank Order Listing By Means:

Round I - N = 129

Rank	Item #	Mean	Std. Dev.	Median
1	9	69.06	25.21	73.75
2	35	68.27	24.50	71.56
3	19	67.05	27.05	69.06
4	17	65.39	26.05	70.91
5	24	65.31	28.92	75.00
6	34	52.05	24.80	66.59
7	2	61.75	24.56	63.40
8	10	61.02	26.02	62.50
9	1	60.87	25.07	63.54
10	27	60.79	25.12	60.87
11	14	60.62	27.34	66.11
12	26	60.23	27.31	63.82
13	30	60.00	28.12	63.85
14	36	59.84	28.23	66.39
15	4	59.77	26.99	61.67
16	23	56.80	27.83	60.00
17	29	56.77	27.80	62.00
18	8	56.69	26.91	59.57
19	12	56.41	26.97	58.53
20	31	56.19	28.45	58.50
21	16	54.65	28.17	57.83
22	25	53.75	28.42	58.33
23	32	53.49	25.94	56.90
24	33	52.95	27.74	58.52
25	22	52.76	27.85	56.32
26	6	52.20	25.04	57.50
27	20	51.43	27.39	56.00
28	15	51.36	27.34	51.94
29	11	51.18	26.11	53.33
30	18	51.17	27.14	55.87
31	13	50.24	27.81	51.87
32	7	48.37	30.49	52.31
33	28	47.56	24.42	48.46
34	21	42.29	27.18	49.09
35	5	43.18	27.64	40.00
36	3	41.98	25.46	38.89

Clearly, it would be necessary to observe the stability of this item in the next round.

A frequency distribution was plotted of the mean scores for the 36 questionnaire items (Table IV). The shape of the distribution is clearly not normal. The total range of the distribution is quite narrow, varying from a score of 40 to one of 70. This was an unwelcome finding, for it gave warning that the range of the Round II scores could not possibly be much less.

Another item of interest clearly visible on this distribution was the fact that more than half of the items ranked below 60, meaning that the majority of the respondents considered most items to be of less than "moderate importance".

The preliminary analysis provided the following results:

1. There were no "bad" items, and the respondents were able to score each proposal for importance;
2. The initial rank order listing of the items provided the investigators with some first indications of the rated importance for each proposed research project;
3. The mean scores of the thirty-six distributions tended to be bunched fairly close together;
4. Most items on this first questionnaire were regarded as being of less than moderate importance.

DELPHI STUDY: ROUND II RESULTS

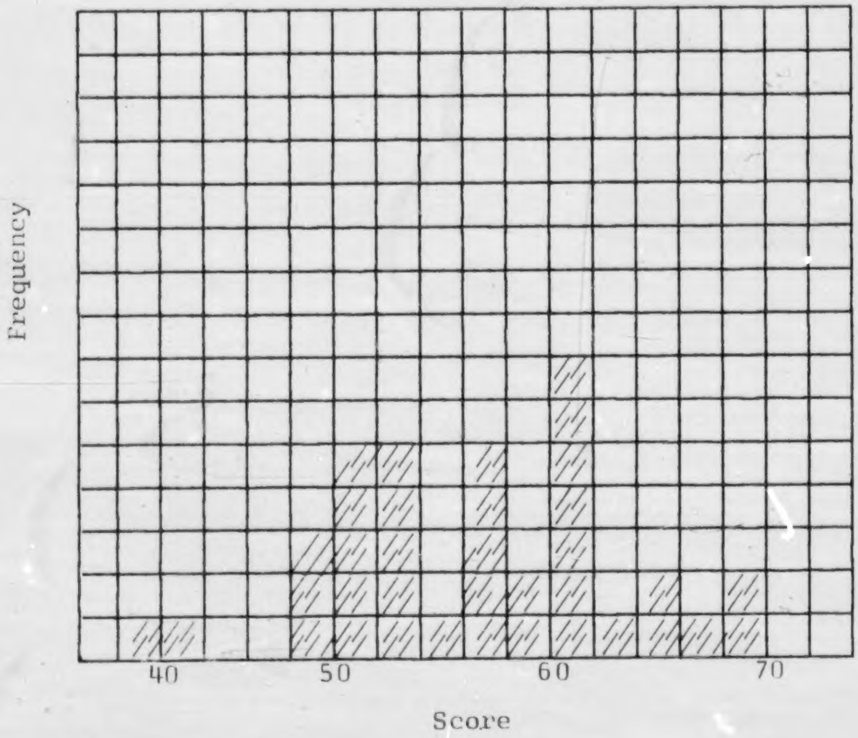
While this preliminary analysis was taking place, a second questionnaire was being prepared. This was identical to the first one except for a change in the cover letter and the addition of the Delphi type "houses" on each scale to indicate the median score and the semi-inner-quartile range. This new form was sent to each of the 129 respondents who returned the first questionnaire. Also, as is indicated in the cover letter, the original rating scores were copied on to the new form, and a circle was drawn around each item number when the respondent's score fell outside the mid-range. The second round questionnaire is reproduced on Table V in order to display both the results of the first round analysis and the form of the feedback used.

TABLE IV

Frequency Distribution of the Mean Scores

For The 36 Questionnaire Items,

Round I - N = 129



The general rationale for the second and subsequent rounds (if any) in a Delphi study was presented in the previous chapter. Essentially the Delphi study attempts to increase the reliability of predictions by providing each respondent with feedback knowledge of group interaction. Generally, one does not expect a radical revision in the ranking of survey items from one round to the next although some changes are likely. The statistical variable that is expected to change with feedback is the range of the responses. Specifically, it was hypothesized that the range of the distribution would decrease and the shape of the distribution would become more peaked or leptokurtic. Such a change would increase the reliability of the rankings and increase the degree of confidence that one can place in the predictions.

In this particular study, as has been pointed out, the range of the mean scores for the first round was already narrow and so the second round scores were not expected to show a statistically significant decrease in the standard deviations. Nevertheless, it was assumed that the group feedback would improve the overall reliability of the predictions and that this could be demonstrated statistically. Also many other statistical comparisons could be made.

The resulting rank order distribution of mean scores for Round II is shown in Table VI. Note that the number of respondents for Round II is 104 whereas for Round I it was 129.

A frequency distribution of mean scores for Round II was plotted (Table VII). Although somewhat similar to the Round I plot, there are some important differences. First of all, there was a slight shift in the distribution to the upper range of the scale, and the total range of the distribution was extended slightly. There was also a slight decrease in the average separation. Of particular significance was the clear separation of the items into four groups which improved the interpretability of the data.

The shift in the rank order of the items from Round I to Round II can be seen in Table VIII. Note that this table is calculated on the basis of the 104 respondents who answered both Round I and Round II questionnaires. There is, therefore, a slight difference in the Round I scores on this table as compared with results recorded in Table III.

In interpreting Table VIII, note also that the rank order distribution divides itself into five reasonably distinct groups, and although there are inversions of items within the groups, the groupings remain remarkably stable. There may be some question as to whether item #19 should be considered the most important research project, but it is

TABLE V

A STUDY OF THE NEEDS FOR RESEARCH IN LIBRARY AND INFORMATION SCIENCE EDUCATION

Los Angeles, California
March 23, 1970

Dear Colleague:

First of all, I wish to thank you for your cooperation in responding to the questionnaire and for your help in rating the various research projects proposed to improve the effectiveness of library school education. We have tabulated your responses and computed the median scores and the semi-interquartile ranges for each item. The results are recorded on the following pages. The "house" encompasses the range of the middle fifty percent of the scores, and the peak indicates the median.

In providing you with these results, we have in addition to the summary statistics, recorded (in red) your original ratings. We have also circled the number of each item in which your score fell outside of the mid-range. I am sure that you will want to examine these data.

We are interested in improving the reliability of the ratings and the significance of the rank order by which the final results will be listed. Consequently, I am asking for your help one more time – a last time. Now that you have this feedback, please rate all of these projects, once again, by placing a "/" on the accompanying scale. Your rating should reflect your own professional judgment of the project's potential importance. You may repeat your original rating or you may change it. Please consider the circled items with particular care. If you wish to comment on the reasons for your rating – either for repeating it or changing it – please do so! These comments will be considered in the qualitative evaluation of the results.

When you have completed the ratings, please return the questionnaire in the self-addressed, stamped envelope. Your name will in no way be connected with your replies in the analysis of this study. You will, however, be informed of the results of the study as soon as they are available.

It is very important that all of the questionnaires be returned. These ratings will have a significant impact on future library school education and research. Your help in providing the ratings is appreciated.

Sincerely yours,

Harold Borko

Harold Borko
Project Director

ID # ____________________

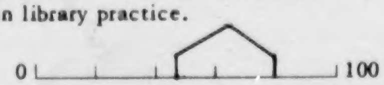
THE SCALE

IN ALL CASES THE REFERENCE POINTS ON THE SCALES HAVE THE FOLLOWING MEANINGS:

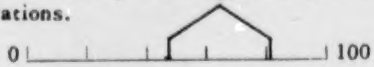
0 = of no importance
20 = of very little importance
40 = of slight importance
60 = of moderate importance
80 = of great importance
100 = of very great importance

It is proposed that a research project be undertaken to:

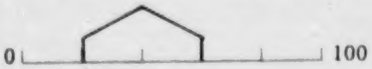
01. Develop a set of job analyses for library positions that concentrates on the knowledge required rather than on the operations performed for specialized education in library practice.



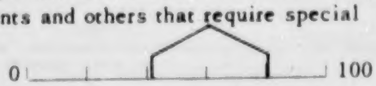
02. Estimate, for purposes of library school curricula planning, the future impact of technology on various types and sizes of libraries with particular reference to when these libraries will be able to afford and use automated information processing techniques in their normal operations.



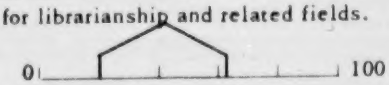
03. Investigate the validity of generally held ideas and practices concerning the physical facilities, equipment and space needed by library schools to make teaching, studying and research more effective.



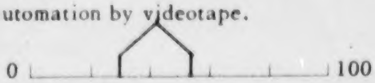
04. Investigate the special problems involved in the recruitment, selection and education of minority group students and others that require special attention.



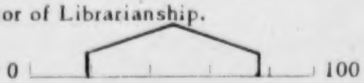
05. Determine the degree of duplication and coordination in the programs and activities of the several professional associations or units concerned with education for librarianship and related fields.



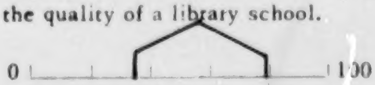
06. Organize conferences on a regional basis to encourage wider utilization of newer media and materials demonstrating and evaluating some recently completed experiments on the applications of innovative procedures to library school education, e.g.,
   a) cataloging as taught by computer-assisted instruction and by Tele-lecture,
   b) children's literature and storytelling by television,
   c) library automation by videotape.



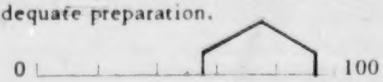
07. Investigate the need for and the function of the doctorate degree in librarianship as well as the desirability of having another type of advanced degree that is service rather than research oriented, e.g., a Doctor of Librarianship.



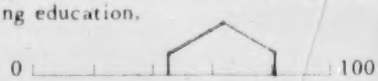
08. Evaluate the standards, procedures and costs in accrediting library schools including the extent to which quantitative data can be used as an index to the quality of a library school.



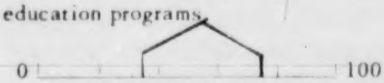
09. Investigate (a) the administrative and management roles that librarians are likely to fill, during their first five years on the job, in such areas as planning, cost and production control, personnel, systems analysis, etc., (b) the knowledge and skills required to properly carry out these functions, and (c) whether current library school curricula are providing adequate preparation.



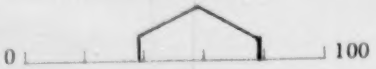
10. Develop an instrument to be used in periodic national surveys to:
   a) determine the self-perceived educational needs of professional librarians and their job functions and personal characteristics.
   b) recommend content and methods of providing continuing education.



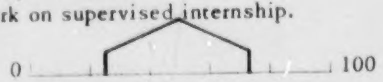
11. Evaluate the effectiveness of postgraduate supervised training programs and to study the desirability and practicality of utilizing practicum training in continuing education programs.



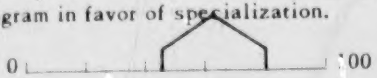
12. Investigate the possible roles that libraries and library schools could fulfill, and the methods they could use, in improving race relations and in providing library services to minority and culturally disadvantaged groups.



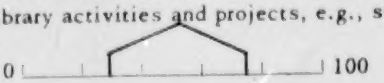
13. Organize conferences on a regional basis to demonstrate the methodology and effectiveness of innovated teaching techniques in library education, e.g.,
a) seminar method,
b) case study method,
c) field work on supervised internship.



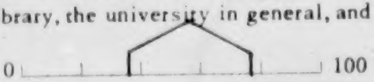
14. Compare and evaluate the effectiveness of MLS educational programs that emphasize more core curricula and less specialization, vs those that minimize the core program in favor of specialization.



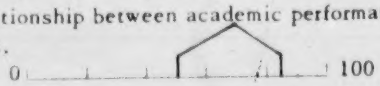
15. Investigate problems relating to library school financing, including such matters as basic budgets and sources of funds (federal, foundation, etc.) for additional library activities and projects, e.g., student aid.



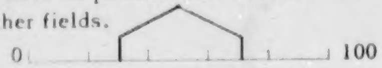
16. Investigate ways to achieve close coordination of library school activities with the programs of the university library, the university in general, and the community.



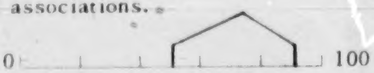
17. Investigate factors influencing the selection and retention of students, including:
a) educational background and work experience,
b) personality, attitudes and goals,
c) performance measures,
and the relationship between academic performance and job success.



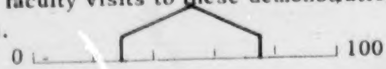
18. Study and compare the effects that different accreditation procedures and the organizational level of the accrediting bodies (e.g., national, statewide, professional association, etc.), have on professional education in librarianship and other fields.



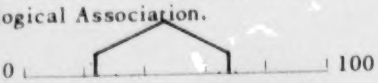
19. Study the feasibility of a national program of continuing education for librarians and evaluate this and alternative ways of providing continuing education through the effective utilization of library schools, libraries and professional associations.



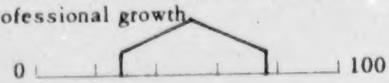
20. Evaluate pre-service and in-service laboratory experience in:
a) bibliography and reference work
b) catalog practice
c) information storage and retrieval,
and support faculty visits to these demonstration laboratories.



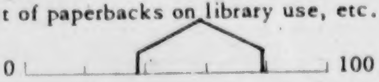
21. Study the patterns of communication and information exchange among library scientists and compare these patterns with those of other professionals as identified in the study of the American Psychological Association.



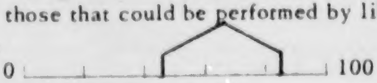
22. Study the motivational factors related to levels of participation in continuing education activities, including the attitudes and support of top library management to such programs, and the correlation between an involvement in community affairs and personal professional growth.



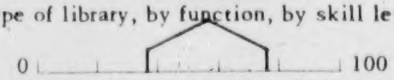
23. Investigate the "sociology of reading" in order to determine relationships between
a) the effect of reading on scholarship interest patterns, prejudices, likes and animosities;
b) the effect of television, or other distractions, on reading;
c) the effect of paperbacks on library use, etc.



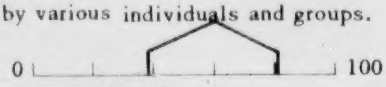
24. Investigate the extent to which the duties required of an MLS graduate in his first professional position are those that could be performed by library technicians.



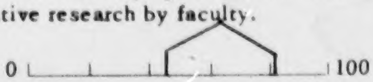
25. Construct a model, based upon an adequate sample of libraries, which can be used to provide educators and administrators with information on actual and anticipated personnel needs by geographic area, by size and type of library, by function, by skill level, etc



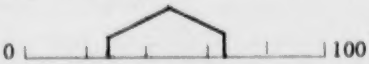
26. Study current library use patterns in order to identify and relate elements in the library system and in the community that influence the nature of library use by various individuals and groups.



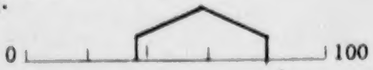
27. Investigate problems relating to library school organization, including:
   a) the role of faculty and students in decision-making and curricula planning,
   b) the size and stability of the faculty,
   c) the desirability of using non-library specialists for teaching,
   d) the means of encouraging innovative teaching and creative research by faculty.



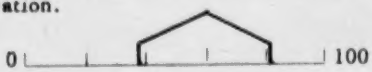
28. Survey and disseminate information about the activities and programs concerned with the organization and bibliographic control of the newer media and the extent of in-house and local producting of such materials for use in library education.



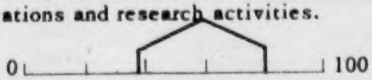
29. Investigate factors that influence recruitment and selection of faculty, including:
   a) education and preparation,
   b) research and publications,
   c) use of specialists and part-time faculty,
   d) factors that contribute to excellence in teaching.



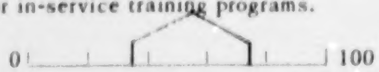
30. Investigate methods and techniques of developing close reciprocal relationships between professors of library science and practicing library administrators in order to enhance the relevance of library school education.



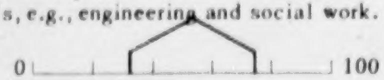
31. Investigate the effect of establishing research centers in library schools on the school's curricula, publications and research activities.



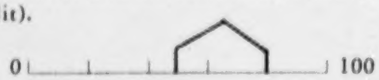
32. Explore possible roles that a graduate library school could perform in developing educational materials for in-service training programs.



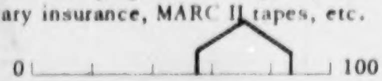
33. Study the trend toward specialization in library education and compare with that of other profession schools, e.g., engineering and social work.



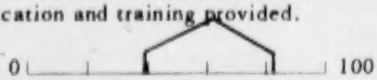
34. Investigate the relative merits of providing courses in information science and library automation
   a) as part of the regular library curricula,
   b) as specialized post-MLS training,
   c) as special short-term courses (credit and/or non-credit).



35. Develop model packaged programs of study in areas pertinent to the needs of librarians for updating and expanding their knowledge. Such programs could include programmed budgeting, automation, library insurance, MARC II tapes, etc.



36. Develop measures of professional proficiency in library service functions at different levels and skills, so that these may be used in evaluating the education and training provided.



THANK YOU FOR YOUR COOPERATION

YOUR COMMENTS ARE WELCOME

7001

TABLE VI

Rank Order Listing By Means:

Round II - N = 104

Rank	Item #	Mean	Std. Dev.	Median
1	19	72.60	23.02	73.89
2	9	72.21	22.98	76.92
3	35	70.39	23.64	73.21
4	24	66.63	26.75	74.37
5	17	66.06	25.52	71.00
6	2	65.39	21.83	65.00
7	26	63.75	25.55	66.87
8	34	62.33	23.36	64.42
9	10	62.31	24.58	63.00
10	1	62.04	24.31	64.77
11	4	61.92	26.62	62.83
12	27	61.84	24.60	62.11
13	36	61.27	27.02	67.94
14	14	60.77	26.90	64.50
15	30	60.67	26.92	64.17
16	12	60.10	26.29	62.19
17	31	59.71	26.73	60.77
18	23	59.03	26.59	61.07
19	16	58.65	25.66	59.76
20	8	58.37	25.35	60.65
21	29	56.92	27.27	62.86
22	6	55.78	22.62	58.91
23	25	55.15	26.45	60.00
24	22	55.05	26.27	57.65
25	11	53.75	24.34	57.61
26	18	53.20	26.05	56.67
27	32	53.17	23.37	55.80
28	33	52.69	26.96	56.00
29	15	52.43	25.26	52.81
30	13	50.88	26.96	51.25
31	20	50.68	25.87	55.23
32	7	49.52	31.11	55.00
33	28	49.23	23.68	51.00
34	21	45.48	25.39	46.25
35	5	42.50	27.44	38.68
36	3	41.55	25.20	38.21

TABLE VII

Frequency Distribution of the Mean Scores For The 36 Questionnaire Items, Round II - N = 104

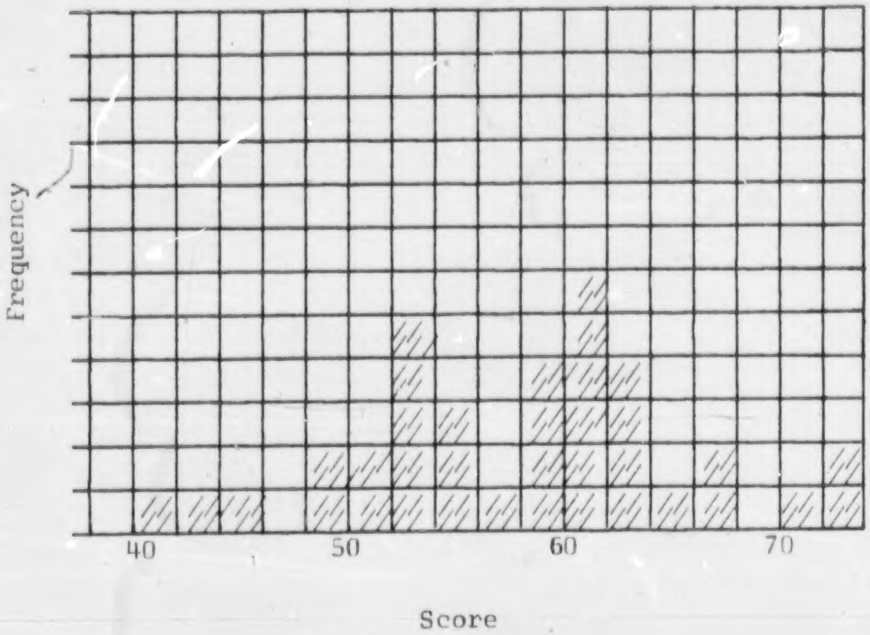


TABLE VIII

Rank Order Listing By Means:

Rounds I and II - N = 104

	Round I		Round II	
Rank	Item #	Mean	Item #	Mean
1	9	70.29	19	72.60
2	35	69.61	9	72.21
3	19	69.13	35	70.39
4	17	65.73	24	66.63
5	24	65.05	17	66.06
6	2	64.50	2	65.39
7	26	62.60	26	63.75
8	34	62.16	34	62.33
9	10	61.76	10	62.31
10	4	61.75	1	62.04
11	27	61.08	4	61.92
12	14	60.98	27	61.84
13	36	60.88	36	61.27
14	30	60.67	14	60.77
15	1	60.59	30	60.67
16	31	59.21	12	60.10
17	12	58.82	31	59.71
18	23	58.04	23	59.03
19	8	57.82	16	58.65
20	16	57.09	8	58.37
21	6	56.37	29	56.92
22	29	55.49	6	55.78
23	22	54.71	25	55.15
24	25	54.37	22	55.05
25	18	53.43	11	53.75
26	33	52.98	18	53.20
27	32	52.33	32	53.17
28	15	51.76	33	52.69
29	20	51.67	15	52.43
30	11	51.58	13	50.88
31	13	51.50	20	50.68
32	7	49.90	7	49.52
33	28	48.92	28	49.23
34	21	46.83	21	45.48
35	5	43.37	5	42.50
36	3	42.18	3	41.35

quite clear that the concensus reached by the respondents considers items 19, 9 and 35 to have greater significance than items 24, 17 and 2.

It has been pointed out that the distribution of scores in item #24 was quite skewed, and that if the ranking had been done by median scores, item #24 would have ranked first in Round I. In Round II, the degree of skewness decreases somewhat, the mean rank is raised from 5 to 4 and, by median, it drops from position 1 to 2; thus indicating that increased stability is achieved by the Delphi method of providing feedback.

In this study of research needs, only two rounds of questionnaires were used. The main objective was to obtain a stable rank order listing of the thirty-six research proposals. This has been achieved and the results interpreted in the concluding chapter. However, some additional analyses were performed, and these will be described and interpreted.

ADDITIONAL DELPHI ANALYSES

The additional analyses were performed to shed light on the changes that occurred between the first and second rounds of the Delphi study. The second round provided each respondent with feedback information on how he rated each questionnaire item in comparison with how the group as a whole rated each item. What effect, if any, did this feedback have on the behavior of the respondent in scoring Round II?

Analysis of Changes: Total Group

One hundred and four (104) respondents answered both questionnaires; there were thirty-six (36) items on the questionnaire, and so there is a theoretic possibility of having 3,744 changes.

What percentage of responses were actually changed?

$$511 \div 3744 = 13.6\%$$

Of the changes that occurred, how many modified their Round II scores toward the group median?

322 ÷ 511 = 65.0%

How many moved away from the median?

179 ÷ 511 = 35.0%

Interpretation:

Only slightly more than 10% of the ratings were changed between Round I and Round II. These results indicate that respondents, who were selected on the basis of their expert knowledge, were secure in their opinions and that these opinions were reasonably stable. When changes did occur, these changes were influenced by the group concensus, for the modifications were almost twice as likely to be in the direction of the group median than away from it. The move toward the median resulted in a slight narrowing of the standard deviation of the distribution and contributed toward the increased reliability of the second round results.

Continuing the analysis of the total population, let us examine the behavior of these individuals whose Round I scores were outside the semi-innerquartile range, and who were therefore asked to consider their ratings on these questions carefully.

The semi-innerquartile range, by definition, includes 50% of the ratings of 1872 of the possible responses. Because of rounding errors and borderline scores only 1746 ratings (46.6%) were considered to be outside the mid-range.

What percentage of these extreme ratings were changed?

292 ÷ 1746 = 16.7%

Of those ratings that were changed, what percentage of them moved into the midrange?

184 ÷ 292 = 63.0%

Since it is possible to move toward the median, but not into the inner-quartile range, what percentage of the changes followed this course of action?

14 ÷ 292 = 4.8%

What percentage of the ratings moved still further away from the median?

$$94 \div 292 = 32.2\%$$

Interpretation:

Although one may well expect that the extreme scores would be those with the greatest tendency to move toward the median, this was not the case. In actual fact only 67.8% of these extreme scores, compared with 65% of all scores, were modified in the direction of the group norm, and of these, only 63% were modified sufficiently to bring them into the mid-range. These slight differences are not statistically significant. What is significant interpretively is that 32% of the extreme ratings moved further away from the median! This result was not anticipated in advance, and may be interpreted from a psychological point of view to mean that those experts when confronted with a mass opinion tended to become even more firmly committed to their own opinions. This tentative conclusion, although interesting, will need further investigation before it can be substantiated.

Analysis by Sub-Groups: Rank Order Ratings

Not only were the data of the total population of 104 analyzed as a unit, but separate analyses were performed based upon the rating scores obtained from educators and non-educators and from males and females. Table IX contains the rank order ratings of the thirty-six questionnaire items for the total population and the four sub-groups based on the Round II scores. Expectedly, there is a great deal of similarity, but it is the differences that occurred which deserve attention and study.

Comparison of Educator and Non-Educator Ratings

Educators and non-educators were divided into groups on the basis of their place of employment. Essentially, if their address was at a library school, they were considered to be library school educators. All others, including those who gave their address as a university library, were counted as non-educators. Some modifications were made as a result of personal knowledge, but this was the essential criterion. Obviously, it is an imperfect criterion, for many librarians teach and many teachers work in libraries or are primarily researchers. However, for the purposes of this study a

TABLE IX

Rank Order Ratings, Round II,

Of The Different Sub-Groups

Rank Order	Total Population Item #	62 Educators Item #	42 Non-Educators Item #	79 Males Item #	25 Females Item #
1	19	19	9	19	9
2	9	9	19	9	35
3	35	35	35	35	10
4	24	24	30	24	19
5	17	17	26	2	17
6	2	2	2	17	26
7	26	8	12	4	27
8	34	4	36	1	30
9	10	1	24	26	34
10	1	27	17	36	2
11	4	23	16	34	24
12	27	10	34	14	16
13	36	34	14	12	8
14	14	31	10	23	1
15	30	26	27	27	36
16	12	14	1	10	31
17	31	25	4	31	11
18	23	18	29	30	6
19	16	36	31	29	4
20	8	6	32	16	32
21	29	33	22	8	14
22	6	29	23	25	22
23	25	12	28	22	25
24	22	16	11	6	20
25	11	22	6	18	33
26	18	11	15	15	12
27	32	30	13	33	13
28	33	20	8	11	15
29	15	15	25	32	29
30	13	32	7	28	23
31	20	13	20	7	18
32	7	7	33	13	7
33	28	21	18	20	28
34	21	28	21	21	3
35	5	3	5	5	5
36	3	5	3	3	21

rough division was all that was required since the aim was to determine whether, in general, practitioners differed from teachers in rating the importance of proposed research projects.

Indeed, there are some interesting differences in the ratings quite obviously based on differing view points and organizational problems. All agree that items 19, 9 and 35 are the most pressing problems. Then agreement stops.

Practitioners place item #30 in rank #4 while the educators relegate this item to rank #27. Item #30 states that: "It is proposed that a research project be undertaken to investigate methods and techniques of developing close reciprocal relationships between professors of library science and practicing library administrators in order to enhance the relevance of library school education". Educators do not feel that this is an important problem while practicing librarians and administrators do. The difference in ratings for this one item clearly demonstrates the extent of the gap that exists between educators and non-educators and the lack of perceptual congruence in their views of librarianship and the problems faced by the profession.

Item #26 and #12 deal with practical problems of the use of the library by the community and the library's role in improving race relations and providing services to the culturally disadvantaged. Again, educators did not give these topics as high a priority as did non-educators.

In contrast, educators rated item #8 which deals with standards for evaluating library schools as a high priority item (rank #7), while non-educators do not find this of vital concern and relegate it to rank #28.

There are other differences as well; the data are in the report, and the interested reader can draw his own inferences.

Comparisons of Male and Female Ratings

Although there may have been some difficulty in distinguishing between educators and non-educators, it can be said with a great deal of confidence that there were 79 males and 25 females among the respondents. There are also some significant differences in their views of the important problems needing study in library education and librarianship.

Women rate item #10 which suggests that research be undertaken to, "Develop an instrument to be used in periodic national surveys to: (a) determine the self-perceived educational needs of professional librarians and their job functions and personal characteristics; and (b) recommend content and methods of providing continuing education" as deserving one of the top three priorities. Males rate this as #16. One can interpret this difference as indicating a lack of complacency that women feel in their roles as professional librarians and their desire to up-grade their status by continuing education. Apparently, the male members of the profession feel more secure or at least experience a lesser need for self examination and study.

Men rate item #4 which deals with the recruitment, selection, and education of minority group students as a high priority problem, while women consider it less important, and rank it #19. Since recruitment is largely a problem faced by library school administrators, one wonders whether this difference (which also occurs between educators and non-educators) is a reflection of the fact that relatively few women are in administrative positions such as Deans of library schools.

In considering the differences in the ratings by sub-groups, it should be noted that there was a near unanimity of opinion on the items rated low in the hierarchy; there were no sub-group differences.

Analysis by Sub-Groups: Comparison of Score Changes

The questions to be considered in this section are whether educators tended to be more changeable than non-educators and whether women changed scores more frequently than men. Table X provides a summary of all categories of changes that occurred between Rounds I and II for the various sub-groups.

Interpretation:

There were differences in the percentage of scores changed between the groups of educators and non-educators in this sample of respondents, but the explanation of the differences can only be tentative. In most instances the magnitude of the differences was not statistically significant. Furthermore, the differences that did occur could be specific to this sample of respondents which may or may not be a representative one. Finally, since all interpretations are necessarily subjective, the reader is cautioned to consider these remarks as opinions only. At best, these interpretative remarks can be used as a source of ideas and hypotheses for future research and not as conclusions. This disclaimer, if you wish to call it that, is particularly important because the investigators had no

TABLE X

Comparison Of The Percent Of Scores Changed Between Rounds I and II By Sub-Groups

Type of Change	Educators	Non-Educators	Males	Females
% of respondents who changed scores	15.9	10.3	13.3	14.7
% of changes toward the median	61.5	72.9	64.1	67.4
% of changes away from the median	38.5	27.1	35.9	32.6
% of scores that were outside the inner-quartile range	42.9	49.7	46.4	47.2
% of these scores that were changed	19.0	13.7	16.7	16.7
% of changes that moved inside the range	62.4	64.1	62.0	66.2
% of changes that moved toward median but not into the range	3.7	6.8	4.1	7.0
% of changes that moved away from the median	33.9	29.1	33.9	26.8

hypothesis in mind as to the expected differences in rating performances between educators and non-educators. From previous Delphi studies, we did entertain an hypothesis regarding differences in score changes between men and women. Even so, this aspect of the project should be regarded as a search for ideas rather than as research to test hypotheses.

Looking at the results recorded in Table XI, it can be seen that the non-educator group was somewhat less likely to change scores than were the educators. However, when they did change scores, they were much more likely to be influenced by the group norms and to change in the direction of the median score. This tendency is seen again on the last line of the table which indicates that when non-educators changed scores that were outside the inner-quartile range, they were less likely to move away from the median (29.19% vs. 33.9%). This explanation is consistent with the interpretative comments about the behavior of experts that has been made previously--that is, it is consistent, if one believes that experts are more likely to be educators (or that educators are more likely to consider themselves experts) than otherwise. Some doubt is cast on this explanation by the fact that fewer scores outside the inner-quartile range, made by non-educators (13.7% vs. 19.0%) were changed. Could this be due to less interest or motivation to review their questionnaire results and make changes? Possibly, since 15.9% of educator's scores were changed vs. 10.3% for non-educators.

Turning to the male and female dichotomy, we find small but consistent differences indicating that women are more likely to change their scores than are men and that they are more likely to be influenced by the feedback provided in the form of group norms. Does this finding also mean that they are less expert than men or more highly motivated to introspect and review previously held opinions? This variable was not controlled experimentally and cannot be answered by this study. However, it should be pointed out that the results--namely that women are more likely to change their scores than are men--are consistent with the findings of previous Delphi studies.

CHAPTER XIV

CONCLUSIONS: A PROPOSED PROGRAM FOR RESEARCH IN LIBRARY EDUCATION AND LIBRARIANSHIP

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The two equally important purposes of this study were (1) to survey a wide range of possible research projects which if carried out could improve library education and service and (2) to assign priorities to these projects based upon the importance of the research as judged by the professional community. Both of these goals have been achieved.

Eminent educators and librarians surveyed the relevant literature and gave their opinion on the problems confronting library education and practice. They also suggested research tasks which should be undertaken to provide data on which to base decisions for change. Any and all of the research projects which had been suggested would contribute toward improved library service. In the best of all possible worlds all should be undertaken. These original articles constitute a survey of needed research to which students and professionals will be referring as they plan their own research projects in librarianship.

We do not live in the best of all possible worlds. We do not have unlimited financial or manpower resources with which to undertake all useful projects. It is also true that although all of the suggested research is useful, some projects are more important than others. Which? The second task of their study was to rank the projects in order of importance. Importance was to be judged "on the basis of how desperately library school educators and library administrators need the kinds of data that the suggested research projects would provide and by estimating the probable impact that the anticipated research results would have on library education and practice".

The many suggestions made by the ten consultants were compacted into thirty-six proposed research projects, and these were rated, using the Delphi technique, by over one hundred carefully selected respondents. The results of the survey were tabulated in Table VIII of the preceding section, and other aspects of the survey were also discussed. Now it is time to examine not just the numerical ratings but the kinds of research that the respondents deemed to be important or unimportant and to propose a program of research in library education and librarianship that should be implemented.

All thirty-six items were assigned positions in a rank order scale, and so in one sense we have a research priority order ranging from one to thirty-six, but this simple manner of interpreting the results is not quite accurate. A rank order scale is not an equal interval or a ratio scale. If we were to arrange all thirty-six ratings on a linear scale according to their mean scores, some items would bunch together and some would be separated. The inequalities can be seen by examining the last column on Table VIII which lists the mean scores. Note that the difference, the linear spatial distance, between items #9 and #8 is 0.02, between #8 and #7 is 1.42, and between #4 and #3 is 3.76. These differences must be considered in interpreting the importance of the projects and in assigning research priorities. The fact is that not all of the rank positions are equally reliable statistically; some, but certainly not all, of the assignments, may be accidents of sampling and should not be used as a basis for assigning priorities.

By way of illustrating this concept, let us re-examine the data in Table VIII. In Round I, item #14 is ranked higher than item #36; the mean difference is 0.10. In Round II, item #36 is ranked higher than item #14; the mean difference is 0.50. Both these differences are within sampling errors. For all practical purposes the rank of these items are interchangeable, and it cannot be said with any degree of confidence that one deserves a higher priority than the other. This does not mean that we cannot establish any priorities, but it does mean that we cannot establish thirty-six individual priorities. The projects have to be grouped, and we can establish five statistically determined priority groupings. These groupings are illustrated in Table VIII and are the basis for the interpretations that follow.

Based upon the results of the Delphi ratings that had been established and assigned the following meanings:

Priority Group I -- of very great importance

Priority Group II -- of great importance

Priority Group III -- of moderate importance

Priority Group IV -- of lesser importance

Priority Group V -- of least importance

These groups were formed at the natural breaking points in the continuum and are relatively stable with the possible exception of some of the border items. By working with groups of items, rather than individual items, a more meaningful interpretation of the data is possible.

Priority Group I--Projects of Very Great Importance: Improving and Updating the Skills of Professional Librarians

Items 9, 19 and 5 have been rated consistently as being of the greatest importance. All three of these items deal with the need of practicing librarians to acquire and continually update their skills in order to provide improved library services.

Separate but related research projects were proposed:

(1) To investigate current library school education and its relationship to the knowledge and skills required by librarians during their first five years on the job (9);

(2) To study alternative methods of providing continuing education and the feasibility of a national program (19);

(3) To develop packaged programs, for individual and home use, by which critically needed skills could be learned (35).

In essence the concensus of informed opinion is that the most critically needed task is to engage in research that would provide the librarian with an efficient means for continually updating his knowledge and skills.

Priority Group II--Projects of Great Importance: Library School Planning

Whereas Priority I dealt with the educational problems of librarians after graduation, the items in the second priority group consider graduate school education. Projects that will improve the quality and relevance of the graduate library school are rated as of great importance. It is suggested that research be undertaken:

(1) To estimate the future impact of technology on libraries of various types and sizes so that needed innovations could be included in the curricula (2);

(2) To investigate factors influencing the selection and retention of students and the relationship between academic performance and job success (17);

(3) To investigate and clarify the different educational and job requirements of the MLS graduate and those of the library technician (24).

These Priority II projects did not deal with the pros and cons of specific courses in library schools but probed the underlying concepts on which library education is based. What factors influence the selection of students? Are we training technicians or professionals? Are we teaching computer technology because it is the "in thing" or because these skills will soon be needed by librarians? These are the questions that the respondents felt were of great importance and needed investigation immediately.

Priority Group III: Projects of Moderate Importance

A conglomeration of projects were rated as being of moderate importance. Because this is a conglomeration, it is difficult to classify the topics into a manageable set of categories. Each research project should be considered individually. Yet because it is impossible to cope with fourteen individual topics simultaneously, we have attempted to impose some organization by suggesting groupings of projects into four rough categories, as follows:

A. Projects related to the Administrative Aspects of Library Schools

B. Projects Related to Educational Content

C. Projects Related to the Culturally Disadvantaged

D. Projects Related to Library Administration and Library Utilization

A. Projects Related to the Administrative Aspects of Library Schools

(1) To investigate problems relating to library school organization, faculty, curriculum planning, and innovative teaching (27);

(2) To investigate the effects of establishing research centers in library schools (31);

(3) To investigate and evaluate the standards, procedures and costs of accrediting library schools (8);

(4) To investigate methods and techniques of developing close reciprocal relationships between professors of library science and practicing library administrators (30);

(5) To investigate ways to achieve close coordination of library school activities with the programs of the university library, the university in general and the community (16).

B. Projects Related to Educational Content

(1) To investigate, compare and evaluate the

effectiveness of MLS educational programs that emphasize more core curricula and less specialization vs. those that minimize the core program in favor of specialization (14);

(2) To investigate the relative merits of providing courses in information science and library automation as part of the regular curricula or otherwise (34);

(3) To develop an instrument to be used in periodic rational surveys to determine the educational needs professional librarians and to recommend content and methods for providing continuing education (10).

C. Projects Related to the Culturaly Disadvantaged

(1) To investigate the possible roles that libraries and library school could fulfill in improving race relations and providing library services to minority and culturally disadvantaged groups (12);

(2) To investigate the special problems involved in the recruitment, selection and education of minority group students and others that require special attention(4).

D. Projects Related to Library Administration and Library Utilization

(1) To develop a set of job analyses for library positions that concentrate on the knowledge required rather than on the operations performed (1);

(2) To develop measures of professional proficiency in library service functions at different levels and skills (36);

(3) To investigate the "sociology of reading" in order to determine relationships between the effects of reading, television and paperbacks on library use (23);

(4) To study current library use patterns in order to identify and relate elements in the library system and in the community that influence the nature of library use by various individuals and groups (26).

Priority Group IV: Projects of Lesser Importance

Although the items that comprise Priority Group IV are listed as being "of lesser importance", the term is a relative one. All of the projects selected for inclusion in the questionnaire are worthwhile projects. The respondents had the difficult task of selecting the best from among the good. The projects in this group are of lesser importance only when compared with the other projects from which the selection was made.

Like the preceding grouping, the projects in Priority group IV cover a conglomeration of topics on which an *ex post facto* classification into broad categories has been imposed. These categories deal with

A. Administrative Aspects of Library Schools

B. Innovative Teaching and Newer Media

C. Continuing Education

A. Projects Related to Administrative Aspects of Library Schools

(1) To investigate factors that influence recruitment of library school faculty (29);

(2) To investigate problems relating to library school financing and sources of funds (15);

(3) To study and compare the effects that different accreditation procedures would have on library education (18);

(4) To study the trend toward specialization in library education as compared with that of other professional schools (33);

(5) To construct a model that can be used by educators and administrators to predict library personnel needs (25);

(6) To investigate the need for, and the function of, the doctorate degree in librarianship (7).

B. Projects Related to Innovative Teaching and Newer Media

(1) To organize regional conferences to encourage wider utilization of newer media and innovative techniques such as Tele-lecture, television, and videotape for library school education (6);

(2) To organize regional conferences to demonstrate the methodology and effectiveness of the seminar, case study, and field work methods in library education (13);

(3) To evaluate pre-service and in-service laboratory experience in bibliography, reference, cataloging, and information storage and retrieval (20);

(4) To survey and disseminate information about the activities and program concerned with the organization and control of newer media materials (28).

C. Projects Related to Continuing Education

(1) To study the motivational factors related to participation in continuing activities (22);

(2) To evaluate the effectiveness of postgraduate supervised training programs and to study the desirability and practicality of utilizing practicum training in continuing education programs (11);

(3) To explore possible roles that a library school could perform in developing educational materials for in-service training programs (32).

Priority Group V: Projects of Least Importance

As is true of all rating scales, some items must be placed on the bottom of the list. What were the projects that were rated of least importance by the majority of the respondents? The three items in Priority Group V deal with different subjects and provide an indication of the kinds of projects in which the library profession is uninterested at this time.

The low rated projects are:

(1) To study patterns of communication and information exchange among library scientists and to compare these patterns with those of other professional groups (21);

(2) To investigate the programs and activities of the several professional library assocations and determine the degree of duplication (5);

(3) To investigate the validity of generally held ideas and practices concerning the physical facilities, equipment and space needed by library schools (3).

RECOMMENDATIONS

At the start of this study the principal investigator and his staff were asked to provide a listing, by priority, of those research projects which should be undertaken in order to improve the effectiveness of library and information science education. This charge has been fulfilled. A list of thirty-six projects was suggested and evaluated by a selected sample of educators and practitioners in library education, librarianship and information science. A statistical analysis of the data led to the establishment of five priority groups, and each item was assigned one of these five priority ratings. Thus it can be said that the study is finished and the mission completed. If, however, the final report is filed and forgotten, this study will have been a failure and a waste of time, money and effort!

A responsible analysis of research needs has three components:

(1) A survey of alternatives, that is, an exploration and description of the major possible courses of action, the various useful research projects, that might be undertaken;

(2) An analysis of preferences, that is, a prediction of the desirability of each research project in accordance with the criterion of importance by which the probable consequences are to be judged;

(3) Implementation, that is, the construction of a policy for carrying out preferred alternatives and thus increasing the probability of achieving a more desirable future--more effective and relevant library education--as a result of planned action.

The task is not finished, for only the first two components have been completed. We now have a better idea of what research is required to improve educational practices. Suggestions have been made and priorities established. Now the plans must be implemented. It is up to us professionals in library and information science education to propose, plan and execute specific research projects that would provide the data on which to base decisions and then to convert our knowledge into a program for improving library education. Without implementation, research planning is a useless exercise. The proposed research must be undertaken and the results transferred and implemented into improved curricula for educating library science personnel.

A NOTE ON THE FORMAT OF THE REPORT

The reader might have noted and wondered about the unusual form of the typescript for this report. It is worth noting; the type font is slightly different, and the pages are right justified. The manuscript was prepared, not on a typewriter, but by use of an upper and lower case print chain as output from the IBM System/360 computer. The program used is called FMS--A Format Manipulation System. It was programmed by Steven S. Silver as a project of the UCLA Campus Computing Network and the Institute of Library Research. The text was typed on a remote keyboard by an Institute secretary, Joyce Graves, and proof read and edited by Peter Watson.

The main advantage of this system is the great flexibility. Words, or even whole paragraphs and sections, could be added or deleted without requiring retyping of the unchanged portion of the manuscript. It is not a difficult system to learn, and once learned, typing proceeds at the same rate, or even faster, than the ordinary electric typewriter. Draft printouts cost a few dollars each, dependent upon the number of pages, but this is far less than the cost of typing and retyping drafts.

For the UCLA Institute of Library Research, the use of FMS has another advantage: a large machine record data base of natural language text has been prepared as a by-product of the report typing. This data base will be used by researchers in the Institute for studies in automated indexing, abstracting, and other aspects of text processing.